

University News

MONDAY, SEPTEMBER 19, 1994

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S.S. GUPTA

Managing Colleges — The Agra University Scheme

G.S. SIVIA

University Sports in India

NEERU MISRA

Women's Education, Human Development and NEP

S. SIVARAJ PANDIAN

Technology — An Integral Part of Teaching-Learning

C. NARAYANA REDDY

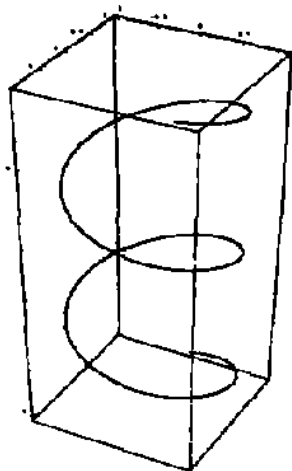
Our Composite Culture — Convocation Address

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```
In [ 1 ] := 3 ^ 50
Out [ 1 ] = 717897987691852588770249
```

```
In [ 2 ] := N [ ( 2 - 3 I ) / ( 2 + 3 I ) ]
Out [ 2 ] = - 0.384615 - 0.923077 I
```

```
In [ 3 ] := FindRoot [ BesselJ [ 0, x ], { x, 14.5 } ]
Out [ 3 ] = { x -> 14.9309 }
```

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```
In [ 1 ] := Integrate [ x / ( a + Exp [ x ] ), x ]

      x^2      x Log [ 1 + E^x ] PolyLog [ 2, - E^x ]
Out [ 1 ] = ----- - ----- - -----
              2a          a          a
```

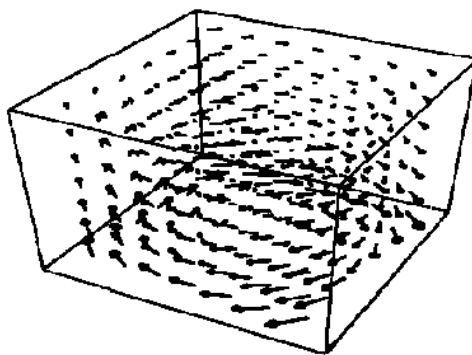
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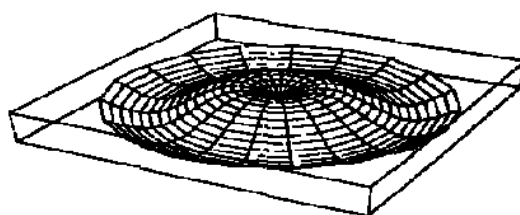
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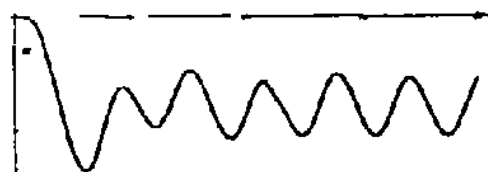


3D vector plot

```
In [ 1 ] := << Graphics `SurfaceOfRevolution`
In [ 2 ] := SurfaceOfRevolution [ Sin [ x ],
                                { x, 0, 2Pi } ]
```



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Editor :
SUTINDER SINGH

MANAGING COLLEGES

The Agra University Scheme

S.S. Gupta*

The U.P. Universities Act lays down in Sec. 2(13) that a Managing Committee of an Affiliated College is one which has been recognised by the University. But nowhere it lays down the conditions on the fulfilment or nonfulfilment or infringement of which the University may, respectively, recognise or decline to recognise or derecognise the Managing Committee of a college. Again, it is not provided whether recognition will be only one time affair i.e. when for the first time the college has been affiliated and its Managing Committee formed or a repeat performance, i.e. after every election of the Managing Committee. The common practice is that recognition is applied for and granted after every election.

The composition of the present bodies of these affiliated colleges differs. For example, there are affiliated colleges which are Government Colleges, or colleges of the quasi-government bodies like Municipalities or District Boards, or of Trusts (Registered under Trust Act) where there is no scope for elections, or are semi-government colleges where government nominates some members, or colleges whose general bodies are registered with the Registrar of the Societies and Chit Fund and whose membership goes on changing. Further, the number of the members of the managing committees and their method of election also differs. Every one has a constitution of its own. In such diversification, the task of recognition becomes more difficult.

The parent bodies of bulk of the colleges are registered and are under control of the Registrar of the Societies. But he has no control over the managing committees of the degree colleges. On the other hand, the Vice Chancellor has to recognise the managing committees of the degree colleges but he has no control over the parent bodies. Thus, in the absence of control and supervision by one single authority, the scope to manipulate and bypass directions or even rules and regulations increases. It is a common experience that the college managements make best use of these loopholes.

The Vice Chancellor has no direct power under the Act and Statutes to discipline the managements of the colleges though he is required to 'guide and control the work' of affiliated colleges (Sec. 7(2)), to 'Exercise general supervision and control over the affairs of the affiliated colleges' (Sec. 13(1) (a)) and 'Ensure the faithful observance of the provisions of the Act, the Statutes and the Ordinances' (Sec. 13(6)). At best he can recommend to the government to appoint a controller or recommend permanent disaffiliation of a college. In the existing political climate, none of these seems to be an easy task. And then, the Act provides only five grounds under which a managing committee can be

*Vice Chancellor, Agra University, Agra-282 004.

superseded and a controller appointed.

They are:

(i) The 'Management has persistently committed wilful default in paying the salary of the teachers or other employees'. In U.P. the payment of salaries has been taken over by the state govt. and then to prove 'persistent' and 'wilful default' is not easy.

(ii) The 'Management has failed to appoint teaching staff..'. The State Govt. of U.P. has taken over the responsibility of creating posts and recruiting and placing teachers. So, this charge will not stand now.

(iii) The dispute between two sections, claiming to be lawful management has affected the smooth and orderly administration of the college. It will not be an easy task to prove this charge in a court of law.

(iv) 'The Management has persistently failed to provide the college with such, adequate and proper accommodation, library, furniture...'...The adjective 'adequate' and 'proper' will make it difficult to prove the charge.

(v) The Management has substantially diverted, misapplied, or misappropriated the property of the college.

Thus, out of five grounds, only one seems to be effective. However, if a management disobeys court orders, or those of the chancellor, or of the govt., it cannot be superseded. Similarly, if the college management does not cooperate with the University in the 'general supervision and control over the affairs of the affiliated colleges (Sec. 13(1) (a)) or fails to 'ensure the faithful observance of the provisions of the Act, the Statutes and the Ordinances (Sec. 13(4)) or does not allow the orderly and honest conduct of examinations (13(1) (c)) etc. then the University cannot do any thing except remaining to mute spectator.

The past experience is that (a) the elections of the managing committee are not held in time and time barred committees go on prolonging their lives, (b) the managing committees habitually do not comply with the provisions of the Act, the Statutes, the Ordinances, Rules and University directions. For example, the Statutes require them to constitute a Finance Committee and prepare and pass annual budget well in time. They hardly do it and go on

spending as per their likes and dislikes. They interfere in the day to day administration of the college and do not allow the principal to discharge his duties honestly. Their main interference is in admissions, students concessions, assignment of duties to teachers, selection of games teams etc. (c) the office bearers of the managing committee consider Principal and teachers as their personal servants, and (d) they rush to High Court at college expenses, for getting a stay order against the teachers, university and even chancellor and generally succeed.

It appears most of the managing committees have a negative role. In U.P., the government selects and appoints teachers and pays salaries to all employees. The government also creates posts. As such managing committees have very little work except to mismanage. The teachers associations have been demanding nationalisation of education for a better education. Government could not do it under the plea that the government has no money to pay compensation as provided in the Constitution but the reality seems to be that most of the office bearers of these managing committees are influential persons whom no political party wants to displease.

Under this complex situation, the Agra University, as a first step, thought of a 'Scheme of Management'. It was prepared, discussed with various concerned agencies, including representatives of the managing committees and ultimately passed by the Executive Council in its meeting held on May 28, 1994. It has now come in force as Regulations under the provisions of the Act.

The salient features of this scheme are

1. With a view to have atleast minimum uniformity in the composition of the managing committees of the affiliated colleges, and at the same time to have the least interference in their existing constitution, the composition of the managing committees have been provided. It has two important provisions viz:

a) The Principal of the college, who is an ex-officio member of the managing committee, shall also be the Joint Secretary of the college management, if under the provisions of the constitution of the society, he is not already ex-officio Secretary.

b) Two persons of academic eminence, elected

(Contd. on page 5)

University Sports In India

G.S. Sivia*

Introduction

University Sports in India is a legacy of the British University Sports which travelled to India through the East India Company. Various aspects of the British social and cultural life were carried to India by the officers and the other staff of the East India Company and sports is one of them. In early Britain, educational institutions were out of bounds for sports because of the brutal inflictions the early British folk sports caused, particularly the ball games. Village vs. village, street vs. street and one group vs. another group constituted the rival teams. Group rivalry and vanity ran through the blood streams of the rival teams. Old scores were settled on the playfield. Renaissance, however, brought a complete shift in the focus. New thinking advocated the revival of the Greek classics recognising the important role sports could play in the educational process in developing the human personality. The emerging environment of renaissance thinking enabled sports to enter the corridors of the British public schools; and from there, to the higher education. Thus sports began to receive a stamp approval of the educational authorities and find a place in the curriculum. At the time the East India Company established its business and other mercantile interests in the country, sports had taken deep roots in the British higher education system as a component of the educational process. The same philosophy permeated the Indian system. This is the genesis of the Indian University Sports. Before the setting up of the Inter University Board (IUB) in 1925 the institutions of higher learning in the country were pursuing their own independent policies and, therefore, there was no uniform policy to provide a sense of direction to the university sports. The universities occasionally organised Inter Faculty Competitions on the occasions of festivals as the ancient Greeks did. The underlying idea was to inculcate amongst the youth the spirit of comradeship and the qualities essential for character building.

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Association of Indian Universities, New Delhi-110 002.

Projection at the Inter-University Scale

Barely three years after the Inter University Board was set up in 1925, an attempt was made to survey the available infrastructure of sports facilities in the universities. This was the beginning to consolidate university sports and project them on a national scale. Occasionally, inter university matches began to figure. For example, a cricket match was organised at Mysore between the Bombay University team and the host team in 1935. The process escalated to organising inter university tournaments annually on a regular basis and culminated in the setting up of Inter University Sports Board. This was done in compliance with the decision taken by the Inter University Board at its 16th Annual Meeting held at Trivandrum in 1941. This landmark provided a platform for interaction between university sports talent at a national scale. The President and Secretary of the IUB were made the ex-officio President and Secretary of the Inter University Sports Board which had its first historic meeting in Lucknow on March 24, 1941 where, *inter alia*

I. Adopted the rules for the management and control of the Inter University Tournaments (Inter University Sports Board was now to be the controlling authority of University Sports at the all India level); and

II. Fixed the venues of tournaments for the year 1941-1942, and the events, to begin with, were Athletics, Hockey (Men) and Tennis.

Every organisation of repute works according to a set of written and codified rules. This task was accomplished in 1944-45 when a booklet of Rules and Regulations for the conduct of Inter University Tournaments was brought out. The present edition is, in fact, an elaboration of the broad framework laid down in 1945. All these events consolidated the position of the University Sports. From 1941 till 1973, Inter University Sports Board had its annual meetings regularly. The important items of the agenda used to be:

I. a. Annual Report giving an account of the activities of the year.

b. Organising Secretaries' Reports for the tournaments conducted preceding year.

II. Finalising of the Sports Calendar for the ensuing year.

III. Annual Budget for the ensuing year and the audited statement of accounts for the previous year.

IV. Amendment to Rules and Regulations in the light of the latest development in the field.

V. Appointment of officials for the combined universities teams if there was an occasion to raise such a team in the coming session.

The annual meetings of the Sports Board however, were discontinued in 1973 as a result of a resolution of the Standing Committee of the IUB. The functions of the Sports Board were entrusted to the Sports Committee. Same year, another significant development took place when Inter University Board was renamed as the Association of Indian Universities (AIU). Hitherto, subscription of the Sports Board was separate from that of IUB. Thereafter, the annual subscription of the Sports Board was merged into the annual subscription of the Association of Indian Universities. No Sports budget nor the audited statement of accounts was presented to the sports committee.

State Intervention

As a result of the 1965 war, NCC was made a compulsory subject in the university sector. The experiment, however, did not work for long. In 1969 it was reverted to as an optional subject. To provide for an alternative programme for those university students who did not take up NCC, two alternative streams were evolved i.e. NSO and NSS. It was mandatory for all able bodied university students opting out of NCC, to take up either NSO or NSS. On paper NSO covered the entire university and college students population not covered by NCC or NSS. In actual practice, the scheme touched only a fraction of the students who excelled in sports and attained a fairly high degree of sports achievement. The scheme had the following components:

I. Coaching camps

II. Selection and training of combined universities teams and arrangements for their participation in the National championships.

III. Creation and development of infrastructure of sports facilities in the universities and colleges; and

IV. Award of sports talents scholarship for outstanding university sportspersons.

Introduction of the NSO programme for the elite university sports talent implied membership of the Inter University Sports Board with the selected national sports federations. Unless this was done, selection and training of Indian Universities Teams for participation in the national level tournaments would have been meaningless. No federation will allow the entry of the combined universities team unless Inter-University Sports Board became its member. The Sports Board, therefore, took necessary steps to become a member of important national sports federations i.e. All India Tennis Association, Indian Hockey Federation, All India Women's Hockey Association, Women's Cricket Association of India, Wrestling Federation of India, Amateur Athletic Federation of India, Badminton Association of India, Amateur Handball Federation of India and Rowing Federation of India. In the beginning, the programme achieved a fair degree of success. The combined universities team once won the National Badminton Championship and became joint winners in the National Junior Hockey Championship. The teams have also been winning national championships in Women's Cricket and Women's Hockey.

Theoretically speaking, the objective of NSO scheme was educational — all round and harmonious development of the university students — and envisaged a meaningful involvement of all able bodied university students, who did not opt for either NCC or NSS. In practice, however, the programme was performance oriented. It covered only the elite university sportspersons. By implication and practice the target was to improve university sports performance and its role in achieving a respectable image of India in the International sports arena.

In the meanwhile, the document on National Educational Policy — 1986 was brought out. Two years before, National Sports policy was formulated and approved by the Parliament which laid a great stress on promoting university sports. For the first time, this document recognised the role of university sports in improving national sports standards. NSP-84 and NEP-86 recognised sports as an integral part of the educational process. As a follow up, the Government of India introduced many prize money schemes like cash awards for performance in Inter-University Tournaments and providing sports equipment worth Rs. 50,000/- for winners,

Rs. 30,000/- for runners up and Rs. 20,000/- for 3rd position holders in Maulana Abul Kalam Azad (MAKA) Trophy. To improve the conduct and management of Inter-University Tournaments, the Govt. of India also began to provide financial assistance towards organising these tournaments.

The events following NSP-84 and the NEP-86 have generated a great deal of healthy climate for sports in higher education. Sports, as a subject, and the sportspersons now enjoy a much better position as compared to that in the past. There is visible improvement in the interest being taken by the contemporary university administration. Some universities award a certain quota of marks for performance in sports for admission to the various courses of study.

Future Trends

Over the years the very complexion of sports has changed. Technological advancement and its application in this area has contributed a great deal in this direction. Media has begun to play an unimaginably vital role. A kind of nexus has been created between the industry, media and the sports promoters. The emerging situation has given a com-

mercial dimension to sports. In the western world, this phenomenon has entirely revolutionised the university sports. The changing scenario is also trickling into Indian university system but the pace is very slow.

Indian University sports is in dire need of change in the light of the changed value system. Professionalism in sports to-day is not a sin as understood by the ancient Greeks or by the father figure of the modern Olympics, Barren Piere Coubertin. To meet the challenge of the emerging changes, university sports administration too needs a change. It calls for fresh thinking on the constitutional aspects of the sports departments and how they are placed in the context of overall administrative setting. University sports will have to go in for sponsorship in a big way if it has to keep pace with the contemporary sports aimed at winning laurels rather being a mere academic exercise. We began the same way as student sports in countries like England and USA, and continue to operate at same level and in the same manner whereas, university sports in those countries has undergone a sea change.

Managing Colleges

(Contd. from page 2)

by the managing committee of the college shall also be members of the managing committee.

2. Powers and functions of the managing committees have been provided. The powers and duties of the President, the Secretary and the Principal have been spelled out to ensure smooth functioning of the college and that there is no clash of authorities.

3. If the elections are not held in time or the registration has not been renewed and the parent body has become time barred then the representatives of the parent body in the college management shall *ipso-facto* cease to be the members of the managing committee but the managing committee with the remaining members shall continue to function.

4. For the balanced and rational development

of the college, a College Development Committee has been provided. Its Composition, functions etc have been spelled out.

5. For the colleges having agricultural farms, a scheme of administration has been provided.

6. If, in the opinion of the Vice Chancellor, the management of the college is not functioning well, it may appoint a Controller for six months. The Controller will arrange for fresh elections and the management of the college shall be handed over to the new elected management.

It is hoped that the Scheme of Management of Colleges will greatly contribute in achieving uniformity, better discipline, efficient management and academic excellence.

Women's Education, Human Development and NEP

Neeru Misra*

Human Development as an index for the measurement of development of a society envisages three components — the per capita income, life expectancy, and adult literacy. Broadly, a combination of these three indices is known as the Human Development Index and enables to determine the complementary measure of the Human Deprivation Index. Education forms one of the three components of Human Development Index.

The National Policy on Education—1986, laid down elaborate targets for the women's education. This Policy further identified certain areas where special efforts were required to enhance the effectiveness of the New Education Policy. These special efforts for the implementation of the New Education Policy are listed in the Programme of Action. The Programme of Action of 1992 laid down several high priority areas for the development of education among the women.

Education is in the concurrent list of the Constitution. As a consequence, both, the state as well as the central governments have the jurisdiction over the subject. Thus, the task before the government at the national level is not only to draft and implement a policy which takes into account all the possible variations of the state specific issues, but also to ensure that none of the areas or states are left behind in the progress. The framing of such a policy becomes more complex when it comes to gender related areas because of regional variations in the customs and traditions and rural-urban imbalances which affect the approach to a large extent.

It is heartening to note that in the last financial year, a significant progress has been achieved in the enrolment of girls as a ratio of total enrolment. It is 43% at the primary level and at the higher education stage, it is 33%. This compares favourably with the targets fixed by the government. Realizing the importance of the female education, government had targeted that 50% of the teachers appointed at

the primary stage should be women. Out of the total sanctioned posts, about 49%, fairly close to the target, were filled by women.

The percentage of female literates over male literate in 1991 varies from the high of 91.99% in Kerala to a low of 37.17% in Rajasthan. In other words, Kerala has the distinction of being the state where female literacy is almost at par with the male literacy. However, in Rajasthan, the female literacy is very much behind the male literacy, and there are only 37 literate females per 100 males. The figure is equally alarming in respect of several other states like Uttar Pradesh, Bihar, Dadra and Nagar Haveli and Madhya Pradesh, where the number of literate females per hundred literate males is less than fifty. It is significant to note that in all these states, the overall literacy rate is less than 50%. However, in the case of Orissa and Meghalaya, the total literacy is less than 50% but the male-female gap is not so high. In fact in Meghalaya, the number of literate females per 100 literate males is as high as 84. In Arunachal Pradesh and Andhra Pradesh as well, the total literacy level is below 50% but the male-female gap is less than 50%.

A comparison of the female literacy index for the year 1991 shows that there are nine states and union territories which fall below the national average. These are Orissa, Andhra Pradesh, Arunachal Pradesh, Madhya Pradesh, Dadra and Nagar Haveli, Uttar Pradesh, Bihar, Rajasthan and Jammu and Kashmir. Even though the figures for Jammu and Kashmir are not available for 1991, based on the figures of 1981, it can be easily extrapolated that the female literacy in the state is well below the national average of 39.19%.

As the female population forms half of the national population, the poor performance on the front of female literacy considerably affects the human development index of the nation. It is significant to note that the most populous states of the country, Uttar Pradesh, Bihar, Rajasthan and Madhya Pradesh fall in the category of the most backward states insofar as the female literacy is concerned. By the very fact that these states have a large population, their weight in the national aver-

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Table 1 : Percentage of Literates to Total Population, 1981 and 1991

State/UT	1981			1991			% of Female
	All	Male	Female	All	Male	Female	
Andhra Pradesh	35.66	46.83	24.16	44.09	55.13	32.72	59.35%
Arunachal Pradesh	25.55	35.12	14.02	41.59	51.45	29.69	57.71%
Assam	N/A	N/A	N/A	52.89	61.87	43.03	69.55%
Bihar	32.05	46.60	16.52	38.48	52.49	22.89	43.61%
Goa	65.71	76.01	55.17	75.51	83.64	67.09	80.21%
Gujarat	52.21	65.14	38.46	61.29	73.13	48.64	66.51%
Haryana	43.88	58.51	26.93	55.85	69.10	40.47	58.57%
Himachal Pradesh	51.18	64.27	37.72	63.36	75.36	52.17	69.23%
Jammu and Kashmir	32.68	44.18	19.55	N/A	N/A	N/A	N/A
Karnataka	46.21	58.73	33.17	56.04	67.26	44.34	65.92%
Kerala	81.56	87.73	75.65	89.81	93.62	86.13	91.99%
Madhya Pradesh	34.23	48.42	19.00	44.20	58.42	28.85	49.38%
Maharashtra	55.83	69.65	41.01	64.87	76.56	52.32	68.34%
Manipur	49.66	64.15	34.67	59.89	71.63	47.60	66.45%
Meghalaya	42.05	46.65	37.17	49.10	53.12	44.85	84.43%
Mizoram	74.26	79.36	68.61	82.27	85.61	78.60	91.81%
Nagaland	50.28	58.58	40.39	61.65	67.62	54.75	80.97%
Orissa	40.97	56.45	25.14	49.02	63.09	34.68	54.97%
Punjab	48.17	55.56	39.70	58.51	65.66	50.41	76.77%
Rajasthan	30.11	44.77	14.00	38.55	54.99	20.44	37.17%
Sikkim	41.59	53.00	27.38	56.94	65.74	46.69	71.02%
Tamilnadu	54.39	68.05	40.43	62.66	73.75	51.33	69.60%
Tripura	50.11	61.49	38.01	60.44	70.58	49.65	70.35%
Uttar Pradesh	33.35	47.45	17.19	41.60	55.73	25.31	45.42%
West Bengal	48.65	59.93	36.07	57.70	67.81	46.56	68.66%
Andaman and Nicobar	63.19	70.29	53.19	73.02	78.99	65.46	82.87%
Chandigarh	74.81	78.89	69.31	77.81	82.04	72.34	88.18%
Dadra and Nagar Haveli	32.70	44.64	20.37	40.71	53.56	26.98	50.37%
Daman and Diu	59.91	74.47	46.50	71.20	82.66	59.40	71.86%
Delhi	71.94	79.28	62.60	75.29	82.01	66.99	81.69%
Lakshadweep	68.42	81.24	55.32	81.78	90.18	72.89	80.83%
Pondicherry	65.14	77.09	53.03	74.74	83.68	65.63	78.43%
INDIA	43.67	56.50	29.85	52.19	64.20	39.19	61.04%

Source : Ministry of Human Resource Development. Annual Report 1993-94.

age is high and contributes significantly to the poor national average and the resultant high deprivation index.

Among the important steps initiated in the direction of improving the female literacy, female education and consequent human development index, the conscious effort to ensure that one third of the total number of students in the Navodaya Vidyalayas are girls has been a significant one. This has been largely achieved also and with the passage of time would lead to a strong resource base of

educated women as role model for the future generations to emulate. Thus the process of female education and literacy would become self sustaining.

The New Education Policy also envisages several Total Literacy Campaigns aimed at the deprived sections of the population. A remarkable feature of the total literacy campaigns is that over sixty per cent of the enrolment has been that of women. This is a heartening feature and would add to the greater awakening of women. It would also hasten the pace of women's empowerment which the

recent constitutional amendments seek to achieve.

**Table 2 : State-wise Female Literacy
in Descending Order**

State/Union Territory	1991	1981	1981 Rank
Kerala	86.13	75.65	1
Mizoram	78.60	68.61	3
Lakshadweep	72.89	55.32	5
Chandigarh	72.34	69.31	2
Goa	67.09	55.17	6
Delhi	66.99	62.60	4
Pondicherry	65.63	53.03	8
Andaman and Nicobar	65.46	53.19	7
Daman and Diu	59.40	46.50	9
Nagaland	54.75	40.39	12
Maharashtra	52.32	41.01	10
Himachal Pradesh	52.17	37.72	16
Tamilnadu	51.33	40.43	11
Punjab	50.41	39.70	13
Tripura	49.65	38.01	15
Gujarat	48.64	38.46	14
Manipur	47.60	34.67	19
Sikkim	46.69	27.38	22
West Bengal	46.56	36.07	18
Meghalaya	44.85	37.17	17
Karnataka	44.34	33.17	20

Assam	43.03	N/A	N/A
Haryana	40.47	26.93	23
INDIA	39.19	29.85	21
Orissa	34.68	25.14	24
Andhra Pradesh	32.72	24.16	25
Arunachal Pradesh	29.69	14.02	31
Madhya Pradesh	28.85	19.00	28
Dadra and Nagar Haveli	26.98	20.37	26
Uttar Pradesh	25.31	17.19	29
Bihar	22.89	16.52	30
Rajasthan	20.44	14.00	32
Jammu and Kashmir	N/A	19.55	27

Source : Ministry of Human Resource Development,
Annual Report 1993-94.

Perhaps in no other area has the progress of female education been so phenomenal as in the case of higher education. In 1950-51, the total enrolment of women in the institutions of higher learning was mere 40,000. This figure has jumped more than 4000% in last four decades, and has touched the mark of 15.90 lakhs. However, since the higher education itself has received a great impetus in past few decades of the post-independence period, the percentage of women's enrolment to the total enrolment has increased from 28% to 33% during the same period.

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TECHNOLOGY

An Integral Part of Teaching-Learning

S. Sivaraaj Pandian*

Introduction

Introduction of technology in teaching/learning process now-a-days becomes inevitable. The term 'technology' gave birth to many 'systems and systematic approaches' to education. It is necessary and also quite meaningful to define technology as Herrera (1973) says '... the set of instruments and skills which are used to satisfy the needs of the community.' Sachs (1973) gives a very simple but concrete definition as '... knowledge organized for production'. Technology according to Page (1976) is '... the application of scientific knowledge to a practical purpose (problem) Romizowski (1980, 239) rightly observes that 'technology' obviously describes a 'process' — something that people do to solve problems or to achieve aims and 'products' such as instruments and tools, something tangible that exists and can be used to satisfy the needs of the community'.

Technology : Concept and Dimensions

Technology can be considered into two ways as Naughton (1986, 2-9) argues as technology as things and technology as social process as the dimensions of it. 'Technology of things' is the application of scientific knowledge to practical tasks by organizations that involve people and machines. 'Technology of social process' is the application of scientific and other organized knowledge to practical tasks by hierarchically ordered systems that involve people and machines'. So, technology is not only 'the tool' for the development of science but also the change in social process.

Technology in Classroom Teaching-Learning

Technology is widely used in classrooms from lower level to higher level of its kind. Most audiovisual equipments which are used in education were not designed for educational use, although some have been specially adapted from equipment primarily designed for other purposes (Crocker, 1986,

120). Audio cassette recorders, analogue audio disc record players, digital audio disc record players, slide projectors, video cassette recorders, 8mm motion picture, film projector etc., are all examples of audiovisual equipments which have been designed for private use in the home.

Audiovisual equipment is required at a range of levels of performance to suit different applications. Almost all equipment diversify students' performance. The size of group and conditions of use are especially important.

Use of technology in different kinds for teaching-learning has been briefly identified here.

(i) Lower technology

It refers to the simple media being used for teaching-learning e.g. 'Graphic Production' and 'Photographic Production'.

Graphic production refers to the creation of visual educational materials in preparation of charts, posters etc. Photography plays an important role in the development of instructional materials, and in most organizations involved in production of original photography slide and filmstrip duplication etc. (Burbank and Pett. 1986, 86).

(ii) Broadcasting

Broadcasting is most effective as a means of 'scattering' live or prescribed program signals over a geographic area. The broadcasting transmission technology can be received by any radio and television set within the transmitting stations' coverage area.

In the 50 years history of broadcasting, radio and television have been used to deliver instructional programmes to schools and universities to bring 'master teachers' into the nation's classrooms. Broadcasting is a proven technology and method of programme delivery (Miller, 1986, 77-79).

(iii) Microforms

Microforms are media and a technology for the storage in miniature or printed and other graphic

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materials. Microforms in several film-based formats are widely used in school systems and institutions of higher learning for record keeping, for storage and dissemination of educational information, and for making available materials that are no longer obtainable in the original forms (Minor, 1986).

(iv) Interactive Video

Video technology has been widely used for classroom teaching-learning globally. Interactive video can be defined as 'the presentation of video and audio information according to the response input made by the viewer' (Copeland, 1986, 111). The presentation of images and sound is via a television monitor, which is usually part of a self-contained user station with microcomputers, video source and input device. The source of video can be one of the several devices such as videodisc, videotape or compact disc. The response input can be achieved using one or a combination of several devices such as numeric keyboard, alphanumeric keyboard, touch-screen, light pen, mouse, trackerball and/or voice recognition systems.

(v) Videotex and electronic mail

Videotex is the generic name for information systems which involve the transmission of 'display' text and 'pixel' graphics and their reception on an adapted television. Videotex was first developed as a method of low-cost information delivery into homes, to be available through the use of microcomputers and appropriate additional equipment. Electronic mail is used through a central computer for storage and later interrogation by the addressee of the message (Copeland and Scott, 1986, 88-91).

(vi) Information storage and retrieval

The term 'information retrieval' as commonly used, refers to the searching of a body of literature in order to identify items that deal with a particular topic; the term is synonymous with literature searching (Lancaster and Shaw, 1986). This technology has been introduced in libraries for storage of information and easy access for books.

(vii) Computer technology

Introduction of computers in classroom shows tremendous increase in learning among children. Use of most of educational technology aids has been reduced substantially now since computers can do all the things to facilitate qualitative learning. Computer technology has two kinds of components viz.,

(i) hardware, and (ii) software. Hardware are the accessories and input and output devices of computers such as keyboard, floppies, compact disc etc. Software are programmes that are stored and transmitted through input devices including computer program. Computer assisted learning/instruction, computer based training etc. are the approaches of using computer technology in education.

Synergistic Relations Between Technology and Teaching-Learning

Traditional teaching completely relies upon the teacher who disseminates the information vocally and using blackboard. In other words, 'talk and chalk' is the motto of the traditional education. Even though traditional instruction led to technological and social change in the society, in the forties, the educationists and scientists unanimously declared that the dissemination of the information can be improved qualitatively and quantitatively when technology is introduced as an aid to the teacher for evolving appropriate teaching styles. This was also proved experimentally all over the world by educational researchers. Thence, tremendous efforts were made to integrate these three techniques viz., technology, teaching and learning and thus emerged educational technology.

Almost all the countries in the world conceded the effectiveness of technological devices for academic purpose and themselves engaged actively in educational researches by establishing national organizations and opening centres for educational technology in schools and colleges to reap the maximum benefits from this for the sake of development. There are some pioneer organizations which are involved in researches in this field and have attempted to define the term 'Educational Technology'. Britain's National Council on Educational Technology (NCET) defines it as 'the application of systems, techniques and aids to improve the process of human learning (Collier et al, 1971, 16). Allan Hancock (1977, 5) expresses "indeed, the phrase educational technology has been coined principally to express the notion of men, machines and materials working together to improve the relevance of both teaching and learning process."

The U.S. Commission on Instructional Technology defines educational technology as 'a systematic way of designing, implementing and evaluating the total process of learning and teaching in terms of specific objectives based on research in

human learning and communication and employing non-human resources to bring about more effective instruction'. Instructional technology refers to the processes by which instructional problems are analysed and solution sought through the application of knowledge about learning, learners, and media resources. Instructional technology procedures often result in the creation of new instruction by increasing its effectiveness and efficiency (Locates and Atkinson, 1984, 3).

Interestingly, later on, people started bifurcating educational technology as Mackenzie et al (1970, 139) consider that the use of technology 'in' education is concerned with increasing the use of equipment, and as a concept, the technology 'of' education, improving the effects of learning. But Ramizowski (1980, 239) treats educational technology in another way such as 'high technology' and 'low technology' according to the nature and working of the devices of educational technology.

Other Approaches to Teaching, Learning and Technology

Since the world prizes free thinking, encourages researches in all the ways, it wholeheartedly welcomes and accepts any new approaches related to teaching, learning and technology. So, it is no wonder if some terms introduced in common usage are synonymous to educational/instructional technologies such as media, mass media, media education etc. Locatis and Atkinson (1984, 3) define media as the means (usually audiovisual or electronic) for transmitting or delivering messages. Media include such things as prints, graphics, photography, audio-communication, television, simulating and games and computer. Schramm (1973, 16) in his famous book 'Big Media-Little Media' categorises computer, VCR, TV as 'big media' and radio, filmstrips, graphic, audio cassettes and various visuals as 'little media'. But, the 'new media' and electronic devices are new kind of technologies and people tend to equate the term educational technology with the new media and electronic devices that have grown out of the post-war communication revolution, that is, television and miniaturized radios, audio and video cassettes, computers and communication satellites (Coombs, 1985, 125).

Nevertheless, the term educational technology being used now-a-days is quite common. Since the early 1900s, such terms as visual aids, teaching aids,

audiovisual aids, visual instruction, audiovisual instruction, audiovisual materials, audiovisual communication, audiovisual technology and many more have been used to designate a group of machines and materials. As early as 1926, Nelson L. Greene, a notable pioneer in the audiovisual movement used the term 'visual education' (Saettler, 1968, 3). Kinder (1959, 11) tries to define audiovisual materials as 'any device which can be used to make the learning experiences more concrete, more realistic, more dynamic can be considered as audiovisual materials'.

It has been clearly understood that the aims and approaches using technology devices from print media to electronic media gradually evolved during this century as the names for these approaches changed due to the trends and advancement in effective communication from audiovisual educational technology, thanks to science and technology.

Classification of Learning Resources of Educational Technology

Educationists have tried to classify/categorise learning resources according to certain criteria laid down by them. Mackenzie et al (1980) classify the devices on the basis of information sources. The first one consists of TV, language laboratory and other audiovisual resources. Another category is feedback devices including teaching machines and the third category is reprographic equipment like computers and programmed learning materials. Percival and Ellington (1984, 12-15) categorise educational technology devices in the kinds of techniques as mass instruction techniques and individualized instruction techniques. In mass educational techniques (i) Non-Projective Visual Aids, which do not involve the use of an optical or electronic projector include chalkboard, whiteboard, feltboard, magnetic board, wall chart, flipboard, models and handouts. (ii) Projective Visual and audiovisual aids involve the use of an optical or electronic projector, whether of the front projection or rear projection variety and comprise filmstrips and filmstrip projectors, slides and slide projectors, overhead projectors, opaque projectors, films and film projectors and video cassette and video disc machines (iii) Audio aids that are most widely used in mass instructional situations are tape recorder and record player. Besides these, Radio and TV broadcasting are also treated as separate mass instruction techniques.

Individualized instruction techniques are classified as follows

- 1) Textual materials as
 - (i) books
 - (ii) structured notes, and
 - (iii) textual programme materials.
- 2) Audiovisual self-instructional materials such as
 - (i) audiovisual learning programmes,
 - (ii) language laboratories, and
 - (iii) broadcasting media.
- 3) Computer-based self instructional materials include
 - (i) computer assisted learning/instruction, and
 - (ii) interactive video.

Media have two components viz; hardware and software. Hardware are the machinery devices used to produce or present a message. Some examples of hardware are filmstrip projector, tape recorder, overhead transparency projector, record player, television monitor, computer terminal and also input and output devices such as audio/video cassettes, transparencies, records, floppies, compact disc, keyboard etc. Software are programmes that are stored and transmitted through input devices including computer programmes.

Importance of Educational Technology

Numerous researches have been conducted on the utilitarian value of educational technology equipment in teaching-learning process. Almost all these researches have established the importance of these equipment in schools and colleges. UNESCO and USAID (United States Agency for International Development) in 1965-66 jointly conducted a research project in some countries of Asia, Africa and Europe. The project revealed that 'the media can be and are being used to meet a variety of educational needs, in and out of the school. Specifically, they are being used in a variety of places and ways to meet five major needs viz; 1) to upgrade classroom instruction, 2) to teach teachers, 3) to extend the school, 4) to support the teaching of literacy and fundamental education, and 5) to offer adult education and community development information.'

The Commission on Instructional Technology (1970) identified several potential benefits of educational technology as follows

- 1) Technology can make education more productive,
- 2) Technology can make education more individual,

3) Technology can give instruction a more scientific base,

4) Technology can make instruction more powerful,

5) Technology can make access to education more immediate, and

6) Technology can make access to education more equal.

Background of Research Development in Instructional Media

Saettler (1968, 268) traces the background of research development in instructional media to 1918. Since 1918, numerous studies have been carried out on 'Media Education'. Some of these are briefly described below

Weber (1930) pointed out that visual aids are supplementary to actual experience, and both are fundamental to verbal instruction. Carnegie Foundation study conducted by Rulon (1933) shows a significant increase in informal and conceptual learning when films are used with textbooks. Many of the instructional radio research projects were carried out as Ohio Evaluation of Schools Broadcasts Project (1937-43) under the financial support of Rockefeller Foundation and they concluded that radio educational broadcasting is extremely valuable to teachers in providing educational experiences to their students. Studies on effectiveness of readings conducted by Cicero, Illinois (1942) showed that student interest in scientific information could be greatly simulated through the use of recordings.

Research studies of instructional television have been conducted since 1950 (Saettler, 1968). The early researches of, 'Pennsylvania State University closed-circuit Television Project (1954),' and some four hundred quantitative studies analyzed by Kumata (1961) establish beyond doubt that students learn far more effectively from instructional television compared to conventional instruction but there is no overall significant increase in learning through ETV. The Denver-Stanford Project (1964) showed the most effective context of instructional television through audio-lingual method with an electronic aid, such as a dual-channel tape recorder.

A few Indian studies have also been conducted to identify the usefulness of educational technology in teaching-learning process (e.g. Singh, 1980; Kothari, 1985; Neelam Dhamija, 1990;

Purushothaman and Stella, 1991; and Stella, 1992). These studies point out improvement in learning with the use of educational technology equipment.

Conclusion

It is evident that use of technology increases the effectiveness of education. It helps realize the learning outcomes by opening new avenues especially in science and technology. Western countries have already successfully harnessed educational technology to qualitative improvement in learning. In India also, the benefits of educational technology are now being made available into the field of secondary and higher education.

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Our Composite Culture

Jnanpith Awardee, Padmabhushan Professor C. Narayana Reddy, Adviser on Culture & Language, Government of Andhra Pradesh, delivered the Convocation Address at sixty first annual convocation of the Annamalai University. He said, "There has been historic continuity and cultural compositeness. The innate quality of the broader vision of the Indian society did facilitate inflow and absorption of various systems of thought. The qualities of tolerance, devotion to God, respect for man, obligation towards the society, regard for peace for all and love for the country inherent to the Indian way of life from time immemorial helped the growth of our composite culture." Excerpts

Whenever I think of languages, I invariably recollect what Pandit Jawaharlal Nehru said. I quote:

"It is certainly desirable that every person of India, who claims to be educated should know something about languages other than his own. He should be acquainted with the classics and the famous books written in those languages and thus imbibe into his being the broad and many sided facets of Indian Culture'.

In my opinion only humanity is endowed by nature with the greatest asset, languages and not other beings. Languages knit men together. They are a boon to our country. The richness of each one of the Indian Languages is a treasure to be proud of. Indian languages have many things in common and the literatures of regional languages have been built on the same bedrock of Indianness. Thus, we find India to be a confluence of vibrant languages with admirable linguistic synthesis.

I would sketch briefly the characteristics of plurality. India consists of 7 natural geographical

regions, which in turn are divided into 68 socio-economic sub-regions. This is the land of 12 ethnic groups and 7 major religions. So far as languages are concerned, it is estimated that we have 1016 classified languages and 514 unclassified languages. The Official Language Commission of India states that there are 179 languages and 544 dialects in our country. So far, we have included 18 languages in the Eighth Schedule of the Constitution of India. 22 languages come under the purview of the Central Sahitya Akademi. The field of education provides for 36 modern Indian languages, 4 classical Indian languages, 8 modern foreign languages and 7 foreign classical languages. These figures show the vastness of the Indian linguistic scene.

Being basically a poet, aspects of languages and literatures naturally draw my attention. I would, therefore, like to touch upon some elements of linguistic affinity and integration, with particular reference to Tamil and Telugu. I may incidentally give some interesting examples to underscore the points, I am attempt-

ing to make out. You know, 'Andhra Maha Bharatham' is the first major literary work in Telugu literature. You may be surprised to learn that Nannaya, who initiated translation of this epic was a Kannadiga by origin and Raja Raja Narendra, who commissioned and promoted this literary work was a Tamil king, who ruled Vengi in the eleventh century. As a Telugu poet, I feel proud of this historic event, the birth of *Telugu Bharatham* at the instance of a Tamil king. Subbarama Deekshitulu translated 'Andhra Mahabharatham' of Nannaya, Tikkana and Errana into Tamil at the instance of Jagadeeswara Ramakumara Ettapa of Ettayapuram.

A classic case of linguistic affinity is the composition of *kritis* by Saint Thyagaraja in Telugu. Tamil musicians have never hesitated to sing them with soul and heart. Telugu language and literature flourished during the reign of the Nayak kings in the Tamil region.

What I would like to impress on is that there was a continuous literary interaction between the Tamils and Telugus right through the ages. The two languages have borrowed words mutually. According to Lexicographers about 450 Telugu terms made their way into Tamil and more than 500 Tamil terms entered the Telugu language. Admiration for one another's language is the principal cause for this healthy two way flow of terminology and there could be no better eulogy than the lines of Mahakavi Subrahmanya Bharathi in his monumental song 'Bharatha Desa'. They read as follows: I quote:

*Sindhu nadiyin misai nilavinile
Seranannattilam penngaludane
Sundaratthelungunil pattisaitte
Thonigalotti vilaiyadi varuvom*

It is indeed a very good pictorial description. The time is full moon night. The place is the river Sindhu. The company is of Chera damsels. The song recited is one in the euphonious Telugu language.

I cite this poetic opinion of the great Bharatiyar to prove how broad-minded he was. My emphasis is not on the singular beauty of the Telugu language but on the message to the world at large on linguistic integration. All languages in India are great and rich. Tamil is a very ancient language with very early literary traditions. Yet in his poem. Bharatiyar called Telugu 'Sundara'. The memorable lines testify to the broader perspective he had and his large-heartedness and his vision of linguistic fraternity and linguistic unity. I greet the great poet with all my humility and admiration for giving a categorical direction for fostering national integration.

To strengthen the concept of linguistic integration, I may refer here to what the famous historian D.R. Bhandarkar observed in clear terms in his book 'Lectures on the Ancient History of India.' I quote:

No reasonable doubt can therefore be entertained as to the Dravidian speech once being spoken in North India.

I have cited the classic case of languages to demonstrate that the apparent multiplicity is a manifestation of a basic unity. Regions of our country are not isolated units. They are interrelated and closely-knit parts of Mother India.

Primarily, ours is a pluralistic society with many languages, regions, religions, races, traditions and cultural patterns. There

are a number of geographical, historical, political, social, cultural, religious and other events and developments that have contributed to the evolution of a pluralistic yet homogeneous society in our country in the last 5000 years.

In this pluralistic environment, there was an astounding progress of knowledge in all fields. Vedic literature proved to be a perennial and exhaustive source. Ours is the place of birth of Buddhism and Jainism. Successive dynasties ruled this great country. There were foreign invasions and consequently alien governments for a number of centuries. Nevertheless, the country withstood all the ravages of time with unflinching determination and proverbial sagacity, safeguarding the essential characteristic of Indianness. There has been historic continuity and cultural compositeness. The innate quality of the broader vision of the Indian society did facilitate inflow and absorption of various systems of thought. The qualities of tolerance, devotion to God, respect for man, obligation towards the society, regard for peace for all and love for the country inherent to the Indian way of life from time immemorial helped the growth of our composite culture. This legacy paved the way for an organic unity in Indian culture. Harmony, Synthesis and Assimilation operated as the basic elements of this unifying process, which assigned to India the honour of a glowing illustration of 'Unity in diversity' or to put it in other words 'Diversity in Unity'.

This emotional oneness was described by Mahatma Gandhi and Aurobindo as the 'Soul of In-

dia' and Nehru as the 'Spirit of India'. Bankim Chandra personified it as 'Mother India' in his immortal song *Vandemataram*.

Rabindranath Tagore in his *Janagana Mana* — which we adopted as our National Anthem — glorified the collective and integrated structure of the country. Petals are numerous, yet the lotus is one. Linguistic areas are many, yet India is one. Jewels are multi-coloured, yet the necklace is one. States are various, yet the flag is one.

It is against this common background that we adopted a Constitution based on the noble principles of socialism, democracy and secularism, to secure justice, liberty, equality and fraternity to all the citizens of our country ensuring the dignity of the individual and the unity of the nation. We are marching ahead for establishing an egalitarian society, quite suitable to our multiform and polyglot structure. This warrants stronger linguistic unity and steadfast secular approach. In a secular state, the rights of citizens are independent of the faith they profess. The concepts of Divinity and Humanity belong to all religions. The Constitution of India makes adequate provisions for the purpose. Article 25, on the Fundamental Rights, provides for the right to freedom of conscience and free profession, practice and propagation of religion. At the same time, we have Fundamental Duties; it shall be the duty of every citizen of India to promote harmony and the spirit of common brotherhood among all the people of India transcending religious, linguistic and regional or sectional diversities.

In the words of Rabindranath Tagore 'Religion through service, love, compassion, self-respect and respect for humanity as a whole, gives power and life and happiness to all'.

Mahatma Gandhi disapproved a superstitious and blind religion that hates and fights. He wanted the universal Religion of toleration. Swami Vivekananda, who received from the people of this area every assistance and co-operation facilitating his participation in the World Parliament of Religions in Chicago defined: I quote:

Religion is the manifestation of the

Divinity already in man!
He exhorted : 'Break not, pull not down, but build'.

The messages of these and other great people are more relevant today than ever. I would explain this briefly. To be pragmatic and realistic, we must take into account the state of affairs obtaining today. The field of education cannot isolate itself from the general environment present around. As guardians of social awareness and the guiding force for a brighter tomorrow, we should address ourselves to the prevailing situations and offer wise and practicable solutions to correct things wherever they have gone wrong.

It shall not be construed as a sign of pessimism to say that the Indian society is now confronted with many trials and tribulations. The country has been passing through a difficult phase. Every section of the community has its own peculiar problems, not within the easy reach of immediate so-

lution. Besides social evils transmitted from generation to generation, we have economic imbalances, repressive exploitations, political turmoils, religious compulsions and ideological confrontations, often associated with violence and terrorism. On the one side, we find knowledge explosion and on the other, we are witnessing deteriorating social, ethical, human and patriotic values.

A section of the Youth are dismayed over their future prospects and there is the growing menace of drug addiction, indisciplined behaviour and disruptive tendencies. One of the strongest reasons for this undesirable condition is that the students are often misguided. This sort of unhealthy atmosphere is found in many of the advanced countries. We hear of a procedure in some schools in the U.S.A. where students are required to pass through metal detectors installed by the police. According to a report, in Los Angeles as many as 765 fire arms were seized by the police from students last year. A survey conducted recently reveals that in the U.S.A. by the time a student completes his primary schooling, he will witness eight thousand murders and a lakh violent incidents on the T.V.

Compared to this situation, we must admit that the students in India are better behaved and conditions here are healthier and more congenial.

It is an agreed fact that students constitute a major part of the population of India. Further, as future citizens of the country they are the people to preserve the great legacy. This warrants an adequate knowledge of the rich-

ness of our heritage, interaction between students of various parts and the use of art and culture in the service of education. The authorities of institutions of higher learning have a responsibility to create favourable conditions for involving students in cultural as well as social welfare and nation-building activities. The Youth of today have a very positive and equally constructive role to play in the onward march of the nation. The New Education Policy of 1986 laid special stress on national integration and it visualised education as an instrument for the material, physical and spiritual development of the society and the individual.

Awareness of purpose, aptitude for learning, love for the nation, secular outlook, duty towards the community and the country, broad-mindedness and other qualities must be inculcated in our young boys and girls, so that they develop into ideal citizens.

What is needed is a sustained effort and nothing is impossible if there is real determination. I give the English translation of one of my Telugu poems on the subject.

When the hands dare swim
against the current,
the stream is bound to give way.
When the feet are ready to march
the road is bound to welcome.
One shall be equipped adequately-
When the eye is keen,
emptiness is bound to bow down.
Before a man with clenched fist,
the desert is bound to flow.

Excerpts from the Report
by
MG Muthukumarasamy
Vice Chancellor
Annamalai University

Academic Matters

Certain new courses of study have been started in the regular departments, and the Directorate of Distance Education during the year. Also several new courses of study are proposed to be started both in regular and correspondence during the academic year 1994-95. The number of students on the rolls of the University in all streams put together has increased to 1,56,649. A large number of University Scholarships and Stipends have been awarded to students in the Faculties of Tamil and Music to encourage aspirants to these courses.

Research

Research activities at the Ph.D. and M.Phil. levels in various Departments have increased and the procedures for submission and evaluation of Ph.D. theses, have been streamlined to reduce delay in the award of Degrees. The number of candidates awarded the Ph.D. degree by research during the year was 67. Candidates awarded M.Phil degree numbered 136.

Centre of Advanced Study

The Centre of Advanced Study in Marine Biology has been awarded 6 Research projects during the year sponsored by the Department of Environment, the Department of Animal Sciences and

Behaviour and the University Grants Commission with a total financial outlay of Rs. 14 lakhs. Presently, there are fifteen ongoing Research Projects in operation.

Interaction Between Industries & University

A close interaction has been developed between Annamalai University and the Neyveli Lignite Corporation Ltd. during the last decade. Our Faculty members visit Neyveli and conduct special courses and similarly experts from the Neyveli Lignite Corporation are invited to deliver special lectures at the University campus.

Directorate of Distance Education

The Directorate of Distance Education has made great strides in enrolment and in academic improvements. Spot admissions to various courses have been made. The enrolment of students during the year was 1,47,459.

The Rajah Muthiah Institute of Health Sciences

The Rajah Muthiah Institute of Health Sciences started with the Dental College in 1980 and the Medical College in 1985 is developing rapidly with construction of a new Hospital Complex and securing additional equipment and staff. A Bachelor's

Degree course in Occupational Therapy will be offered from the academic year 1994-95, besides P.G. Degree courses and Diploma Courses in certain disciplines. An Urban Health Centre with the aim of Child survival, safe motherhood, family welfare and health education attached to the Rajah Muthiah Medical College and Hospital and located in the heart of the Chidambaram Town is doing yeomen service to the people.

Sports and Games

An enviable tennis complex and modern gymnasium fitted with all equipments are provided.

National Service Scheme

The National Service Scheme of the University has the largest number of units in any single institution of higher learning in our State with a strength of 2000 students and its staff and students are actively involved in integrated rural development programmes all through the year. They organise rural camps for Work Schemes, Health Care, Adult Education, Social Welfare Schemes, Agriculture development etc, in several villages. NSS Unit of the University has been acclaimed as one of the best in India, on the basis of its performance. On this ground, the State Directorate has permitted the University to organise training camps for NSS Officers during each summer.

Centre for Adult and Continuing Education and Extension Services

The Centre for Adult Education and Extension, attached to the University, is playing a significant role by participating in

Mass Functional Literacy Programme. It has adopted one hundred villages for this purpose and in addition to teaching functional literacy, it is providing vocational training to women belonging to the weaker sections of the Community. Ten Jana Shikshan Nilayams have been started in ten different villages. Many awareness meetings were arranged by Population Education Clubs. The International Literacy Day is being celebrated during September each year.

Centre for Rural Development and Uplift of Weaker Sections

This Centre has adopted Kumaratchi block of the District and a baseline survey is being carried out in 19 villages. Certain project proposals with an outlay of Rs. 2.1 crores were also submitted to various National and International agencies for financial support. The Centre also organises periodical meetings with the Bank Officials to discuss about the funds availability for various Rural Development Schemes. The Centre also helps the people of nearby villages in the understanding of rural energy and assists the people to use the energy saving devices.

Social Service League

The Social Service League of the University is a Voluntary Organisation of the students and is functioning very effectively and efficiently since 1942. They are conducting Night Schools for poor students of the locality to help them improve their educational standards. They also conduct camps in rural areas and take up activities to render relief to the victims of natural calamities like floods, break-out of diseases, etc.

National Cadet Corps (NCC)

The University has 3 Battalions (i) 4 TN Bn. Composite Technical Company (ii) 6 TN Bn. NCC and (iii) 5 TN Naval NCC-Div. V with a strength of about 500 cadets. It is rendering very good service to make the Youth physically fit, mentally alert and prepare them to face any challenge in life, apart from the military training and discipline. The University has made it compulsory for every student to participate in any one of the youth activities, like NCC, NSS, Sports and Games, Mass Literacy Programme and Community Health Care for Medical Students.

To make the students pay more attention to their studies, the University has raised the minimum attendance require-

ment for appearing for the examinations from 75% to 80% from the academic year 1989.

Library

Annamalai University Library is the third biggest Library in Tamilnadu, with a collection of 4,13,023 books besides reports and palm leaf manuscripts.

Hostels

Being a unitary and residential University, it maintains separate halls of residence for men and women. There is a separate hostel for the Research Scholars.

Annamalai University has the largest hostels in India providing boarding and lodging to a total number of about 6000 students in the same campus. Efforts are being taken to improve the amenities in all the hostels.

REGIONAL ENGINEERING COLLEGE WARANGAL - 506 004 (Andhra Pradesh)

Advertisement No. Estt. 1/94

Applications in the prescribed form are invited for the following posts on or before 20-10-94.

- Professors:** (Scale of pay Rs. 4500-7300)
(a) Civil Engg. (b) Electronics & Communication Engg. (c) Computer Science & Engg. (d) Mechanical Engineering (e) Chemical Engg. (f) Electrical Engg. (g) Mathematics (h) Chemistry and (i) Training & Placement.
- Assistant Professors:** (Scale of pay: Rs. 3700-5700)
(a) Civil Engg. (b) Electronics & Communication Engineering (c) Computer Science & Engg. (d) Chemical Engineering (e) Metallurgical Engg. (f) Chemistry and (g) Mathematics.
- Lecturers:** (Scale of pay: Rs. 2200-4000)
(a) Civil Engg. (b) Electrical Engg. (c) Electronics & Communication Engg. (d) Computer Science & Engineering (e) Chemical Engg. (f) Mechanical Engg. (g) Metallurgical Engg. (h) Physics and (i) Economics.
- Senior Research Assistant:** (for Entrepreneurship Development Cell)
Scale of pay: Rs. 1640-60-2600-EB-75-2900 (Central Scale)
Reservations (for Lecturer posts only as per 200-point Roster).

No. of posts	OC	SC	ST	OBC			
				A	B	C	D
12	6	2	1	1	1	1	-

Applications and details of qualifications can be had from the Registrar by sending Rs. 100/- (Rs. 25/- in the case of SC/ST) in the form of Demand Draft drawn in favour of the Principal, Regional Engineering College, Warangal payable at State Bank of Hyderabad, R.E.C. Branch, Warangal-506 004. The College reserves the right not to fill any post and also to short-list the applicants to be called for interview.

PRINCIPAL

CAMPUS NEWS

A P State Awards for Teachers

Mr K. Vijayabhaskara Reddy, Chief Minister of Andhra Pradesh emphasised the need for vocationalisation of courses at the degree and university levels in a big way to increase the employment potential in his speech read out in absentia at a function organised to present the State Awards to university and college teachers on the Teachers Day at Hyderabad.

He said the time had now come to think of qualitative progress instead of quantitative expansion and suggested that the decline in academic standards should be checked by teachers.

The Chief Minister said private enterprises should be encouraged in the field of education to enable the state to make rapid strides and the government was prepared to allocate the required funds for education. Philanthropists and industrialists should come forward to invest in the field of education by starting colleges with vocational courses, he added.

Quoting the National Policy on Education, Mr Reddy said the rural, backward and poor people should also have access to quality education at an affordable price. For this, the quality of education in government educational institutions must improve as the underprivileged could not afford education provided by private institutions. Mr Reddy urged philanthropic and social service organisations to bridge this gap and provide education to the poor at an affordable price.

The Chief Minister maintained that while primary and

secondary education had to be given importance to provide literacy and general education to a large number of people in the State, higher education could not be neglected since it was the institutions of higher education which provided trained qualified and skilled manpower to meet the needs of national development. Higher education as the crown of the education system had to set the pace for educational and national development.

He pointed out that Rs 315.39 crore was provided in this year's budget for higher education out of which 90 per cent was being spent on salaries for the staff and making the role of teachers most crucial and significant.

The Chief Minister expressed concern at the decline in moral values of some teachers. He called upon them to derive inspiration from stalwarts like Dr Sarvepalli Radhakrishnan, Iswara Chandra Vidyasagar and Kandukuri Veesalingam Pantulu.

Awards were presented to 52 teachers from the State.

The Principal Secretary Education, Mr Ranga Chari, the Chairman of the State Council of Higher Education, Mr Balakrishna Reddy, and the Director of Intermediate Education, Mr Narsi Reddy, were present on the occasion.

Implementing Education for All

Dr. (Mrs.) Chitra Naik, Member, Planning Commission strongly pleaded for team effort on the part of teachers, parents,

administrators and the community to achieve the goal of 'education for all' (EFA). The concept of "mutuality of goal sharing" should be vigorously promoted, she added.

Dr. (Mrs.) Naik was addressing concluding session of a three-day national meet called by the National Council of Educational Research and Training (NCERT) to discuss baseline studies for the District Primary Education Programme (DPEP). It is expected that the studies would help in the formulation and implementation of DPEP. The baseline studies undertaken pertained to teacher motivation and training, tribal education, education of girls, production and distribution of textbooks, learning assessment of primary school children, and financial sustainability after the project period.

Dr. (Mrs.) Naik said that any primary education programme would be effective only if it is not strait-jacketed. For this, the "ecology of education should be studied seriously", she added.

Concluding, Dr. (Mrs.) Naik said that there was a great need for attitudinal changes among administrators and community members, leading to everyone in the country sharing a sense of "belonging" for the EFA programme.

Earlier, NCERT Director Prof. A.K. Sharma said that the case studies clearly brought out the need for adopting different strategies in various districts for achieving the goal of EFA.

Prof. Sharma expressed his happiness that several research institutions including university departments were willing to take up research work that would ultimately lead to the improvement of the quality of primary education in the country.

More than 150 experts drawn from national and research institutes, state project directors, state education secretaries, professionals from World Bank, UNESCO, UNICEF, European Union and Overseas Development Agency, Planning Commission, MHRD, NIEPA and NCERT participated in the deliberations.

Nagaland University

The 13th central university in the country has been set up in Nagaland with the issue of a notification by the Department of Education. Ministry of Human Resource Development.

Prof. I. Yanger Ao, an educationist associated with a number of institutions has been appointed first Vice Chancellor of Nagaland University by the President who is visitor of the varsity.

Prof. Ao is at present Director of Higher and Technical Education, Nagaland.

Goyal Award for Scientists

Dr. A.V. Rama Rao, Dr G. Mehta, Dr G.S. Aggarwal (all from Hyderabad) and Dr P.N. Srivastava (New Delhi) have been selected for the prestigious Goyal Award, 1994, for their significant contributions in the fields of applied sciences, chemistry, physics and life science, respectively.

The award comprises a gold

medal of 20 gm, Rs 1 lakh and a citation.

Dr Rama Rao, Director, Indian Institute of Chemical Technology, Hyderabad, has won the award for achieving total synthesis of a large number of compounds which found wide application in the drug industry saving crores of rupees annually in foreign exchange.

Dr Mehta, who is the Vice-Chancellor of the University of Hyderabad, gets the award for his internationally acclaimed fundamental contribution to synthetic organic chemistry.

Dr Aggarwal, Professor of Physics at the University of Hyderabad, and Dr Srivastava, Professor Emeritus, JNU, New Delhi, have done research of far-reaching consequence in the areas of modern optical physics and radiation biology, respectively.

The School Connection

The need to achieve quality and excellence in the higher education sector was stressed by Dr. A. Gnanam, Vice-Chancellor, Pondicherry Central University while inaugurating the silver jubilee celebrations of the Mahatma Gandhi Centenary Vidyalaya at Tennur, Tiruchirapalli. He said "the old system of strong foundation of general education, and excellence in the fundamentals and basic degrees at the undergraduate levels" should be revived. It was time to critically evaluate vocationalisation of engineering education.

Referring to the criticism that poor standard in school education was responsible for the higher education sector suffering in quality and vice-versa,

Dr. Gnanam said rapport should be built between school and college education as education was a continuous process. Schools were only feeders for colleges and hence universities should accept the responsibility of producing graduates and post-graduates with commitment.

Dr. V.R. Muthukaruppan, Vice Chancellor, Bharathidasan University laid the foundation for the silver jubilee commemoration hall.

Maulana Azad Education Fund

Maulana Azad Education Fund which was established in 1989 to promote education among the minorities and backward classes has been sanctioned a grant of Rs. 25 crores. This was revealed by the Union Welfare Minister, Mr. Sitaram Kesri. The Foundation was given a grant of Rs 5 crores during 1992-93.

He said that the Government had decided to institute 10 Chairs in selected Indian and foreign universities for conducting research on the contribution of Maulana Abul Kalam Azad to the cause of secularism and pluralistic society.

He said that initially three Chairs in Indian and three in foreign universities including the one in Al Ajhar University, Cairo, were proposed to be set up.

Journal of Francophone Studies

The Department of French, Central Institute of English and Foreign Languages (CIEFL) has launched a new publication "ESSAIS: Journal d'études francophones/Journal of Francophone Studies. This is a biannual, bilingual publication devoted to

sharing teaching experiences, recent advances in Didactics of Teaching French as a Foreign Language, Linguistics, Phonetics and Phonology, Translation, Literature, Civilisation and other relevant interdisciplinary themes in the area of Francophone Studies. It also contains news of research, dissertations, book reviews, reports of seminars/workshops, etc.

For subscriptions, please contact Dr. N. Rastogi, Head, Department of French and Editor, ESSAIS, Central Institute of English and Foreign Languages, Hyderabad-500 007.

Commonwealth Fellowships

The University Grants Commission (UGC) has invited nominations from university and college teachers for the Commonwealth academic staff fellowships and scholarships for 1995. Each university has been advised to nominate not more than four (two each for fellowship and scholarship) teachers, including from affiliated colleges.

The scholarships are normally for two academic years to enable the awardees complete their Ph.D. Though no special areas of study have been prescribed, medicine and surgery have been excluded as these are covered by the Commonwealth Medical Awards.

The fellowships — tenable for one academic year — are aimed at helping teachers working in universities and affiliated colleges enhance their teaching and research experience in the universities for similar institutions in the United Kingdom.

The last date for receipt of nominations is September 30.

Post Doctoral Research Fellowships

The National Institute of Public Finance and Policy, New Delhi, has invited applications, for overseas post-doctoral research in economics. The fellowships are tenable at prominent foreign universities or research institutions and are intended to strengthen research teaching capabilities in India in macro-economics, international economics and public economics and provide opportunities to Indian scholars to sharpen their skills through course work. Proposals for both empirical and theoretical research will be considered. On their return home scholars may be given financial assistance for follow up research.

Indian citizens permanently employed in Indian universities, colleges or research institutions, with a Ph.D. in Economics and below 40, are eligible. No one who has already been abroad for professional research/training for more than four months will be considered.

Further details can be had from the Associate (Admin & Fin) National Institute of Public Finance and Policy, 18/2 Spl. Institutional Area, Satsang Vihar Marg, New Delhi giving date of birth; field of primary specialisation in economics; present position; Ph.D. thesis title; name of Ph.D. supervisor; thesis abstract, University and date of Ph.D. award; with a stamp (Rs 4) self-addressed envelop of size 23 cm x 10 cm. Last date for request of application forms is Sept. 30 and for receipt of completed applications: Nov. 2.

Indian Maritime University

An expert Committee on Maritime Education and Training (COMET) is reported to have suggested the setting up of a fully autonomous apex body designated as Indian Maritime University to manage, control, supervise, direct and monitor existing Government maritime training institutions.

It has recommended that the proposed university should have all the autonomy and powers of a university and in the first stage all the existing Government training institutions will be formed into a society and thereafter the Ministry of Human Resource Development will need to be approached for conferment to the status of a deemed university.

U.S. Award for Prof. Aggarwal

Prof. Girish Saran Aggarwal of the School of Physics of the University of Hyderabad has been chosen for the 'Einstein medal for laser sciences, 1994' by the Society for Optics and Quantum Electronics, U.S.A. The medal is to be presented to him in Montreal in December. Prof Aggarwal has published 300 papers in international journals of physics and optics, and received the Shanti Swaroop Bhatnagar award and Meghnad Saha award. He is the first Indian physicist to be appointed a member of the editorial board of the prestigious international scientific journal 'Physics Review' published by the American Physical Society.

Ambedkar Awards

The first Dr B.R. Ambedkar National Award, 1993, will be given to the National Institute for

Social Work and Social Sciences, Bhubaneswar. The Award carries a cash prize of Rs 10 lakhs.

This was stated by the Union Welfare Minister, Mr Sitaram Kesri in Delhi recently.

The Minister also announced the institution of Dr Ambedkar International Award which will be given to distinguished individuals or organizations engaged in fighting inequality and injustice. The award carries a cash prize of Rs 15 lakhs, a plaque and citation.

Literacy Awards

The Nehru and Tagore Literacy Awards for 1994 have been awarded to Dr K Sivadasan Pillai of Kerala and posthumously to Dr (Smt) Ramabahen Desai of Gujarat respectively.

The awards instituted by the Indian Adult Education Association are announced every year on the eve of the International Literacy Day to help the cause of eradication of illiteracy from the country.

Dr Pillai, Director, Centre for Adult, Continuing Education and Extension, University of Kerala has been selected for Nehru Literacy Award for his outstanding contribution for development and promotion of adult and continuing education for over two decades. He has been instrumental in making over 60000 adult illiterates literate. Dr Pillai has conducted action and applied researches on various issues of adult education. He has written extensively for the non-educators. He was an advisor and resource person to the Total Literacy Campaign (TLC) in Kerala.

The eighth Tagore Literacy Award has been awarded to Late Dr (Smt) Ramabahen Desai,

former Director, State Resource Centre, Gujarat Vidyapeeth, Ahmedabad for her pioneering role in the promotion of literacy among women, Dr Ramabahen had done meritorious work in preparing need based learning mate-

rial for learners and follow-up material for neo-literates. She was closely connected with the Total Literacy Campaign (TLC) in Gujarat and prepared motivational programmes for volunteers and the learners.

News from Agricultural Universities

Symposium on Plant Protection

'Until and unless the farmers at the grassroot level adopt integrated pest management practices in their agricultural routine, the efforts of agricultural researchers and the agricultural developmental plans implemented by the government will hardly be of any use as even today the country is bearing annually a loss of rupees six thousand crore due to pests alone', observed Dr. S. Arya, Vice Chancellor, Chaudhury Charan Singh Haryana Agricultural University (CCSHAU), while inaugurating the Silver Jubilee Symposium on Plant Protection organised by the Directorate of Extension Education. Dr. Arya said that integrated pest management required careful planning, not just an academic exercise, but planning in a coordinated manner, based on field information and data and practices. Thus for successful strategy, planning process at initial stages, implemental and management stages and for assessing and evaluating was a must.

Welcoming the delegates, Dr. A.S. Faroda, Director, Extension Education said that by the end of this century, the population of India may cross the one thousand million mark and the foodgrains requirement to feed this size of population would rise to about 240 million tonnes. On the other hand, agricultural land was also decreasing day by day. In these

circumstances it was imperative on the part of agricultural experts to have an agriculture review of the achievements and plan a new strategy which may meet our requirement in the 21st century.

Dr. H.C. Sharma, Director of Research highlighted the research achievements of the university. He felt that with the development of more than 115 high yielding and disease resistant varieties of cereals, pulses, fruits, vegetables and medicinal crops, Haryana will soon witness another green revolution.

The Symposium was attended by more than 150 delegates from all over Haryana and adjoining states like Punjab, Rajasthan, Uttar Pradesh and Himachal Pradesh.

Five Advanced Centres for PAU

The Indian Council of Agricultural Research (ICAR) has sanctioned five centres of advanced studies (CAS) during the Eighth Five-Year-Plan for Punjab Agricultural University (PAU).

The objective of these CAS is to enhance the competence of the centres to undertake extension education, research activity, training and re-training of scientists of agricultural universities

and ICAR institutes.

The centres will be on genetics, plant breeding, agricultural engineering (farm machinery and power), veterinary (surgery, radiology, gynaecology and repro-

duction) and soils. These centres will get financial assistance of Rs. 41.25 lakh each. The centres have been given to the PAU for its excellent performance in research and education.

News from UGC

Countrywide Classroom Programme

Between 22nd September to 8th October, 1994, the following schedule of telecast on higher education through INSAT-ID under the auspices of the University Grants Commission will be observed. The programme is presented in two sets of one hour duration each every day from 6.00 a.m. to 7.00 a.m. and 1.00 p.m. to 2.00 p.m. The programme is available on the TV Network throughout the country.

1st Transmission

6.00 a.m. to 7.00 a.m.

22.9.94

"Single Tuned Amplifier"
"Educational Values through English"
"Inside the Lung Bronchoscopy"

24.9.94

"Understanding Solar Activity – Part II"
"Teaching English in Rural Areas"
"Stress Management"

25.9.94

"Question Forum"
"Lasya Kala : Mohiniattam"
"The Week Ahead"

27.9.94

"The Glory that was Baijnath"

"Know Your Body"

"Commercial Culture of Ornamental Fishes"

29.9.94

"Father of Laser : Academician A.M. Prokhorov"
"Seed Processing"
"Unmasking Alphabets"

1.10.94

"Molecular Vibrations – Part I"
"Looking at Sociology – Part I"
"Father of Hybrid Rice"

2.10.94

"Book Fare"
"Four Great Inventions in Ancient China"
"The Week Ahead"

4.10.94

"Burning Bright – Sun a Viable Energy Option"
"Tropical Cyclone"
"Yours Sincerely"

6.10.94

"Aluminium – Part I"
"The Architectural Wonders of Mahabalipuram"
"Commonweath Literature"

8.10.94

"Molecular Vibrations – Part II"

"Looking at Sociology – Part II"

"Ecological Modelling"

2nd Transmission

1.00 p.m. to 2.00 p.m.

22.9.94

"Water Pollution Control : Environmental Engineering – Part IV B"

"Hidden in Rocks"

"Paninian Linguistics – Part IV"

23.9.94

"The Good Doctor – Part I"

"Polluting the Environment"

24.9.94

"Question Forum"

"Lasya Kala : Mohiniattam"

"The Week Ahead"

25.9.94

No Telecast

26.9.94

"Ion Beams, Nuclear Collisions and Nuclear Macro-physics"

"Letter of Credit"

"Human Rights - The Evolving Concept"

27.9.94

"Michelangelo"

"Modes of Narrative – Part II"

"Revolution in Orthopaedics – Part IV : Arthritis and its Management"

28.9.94

"Eggciting Nutrition"

"Palatial Puzzles : Excavation at Lalkot"

"Cacti – The Blossom of the Desert"

29.9.94

"The Awesome Power"

"What Shaped our Earth?"

"Paninian Linguistics – Part V"

30.9.94

"The Good Doctor – Part II"

"The Encounter"

"What on Earth Are We Doing"

1.10.94

"Programme on Management"

"Book Fare"

"The Week Ahead"

2.10.94

No Telecast

3.10.94

"Conservative and Non-conservative Fields"

"Current Affairs : Economics and Commerce – Part II"

"Yours Sincerely"

4.10.94

"Valmiki Ramayana and Public Administration"

"Revolution in Orthopaedics – Part V : Joint Replacements"

5.10.94

"Triangular Survey of Topographic Mapping"

"Introduction to Marine Archaeology : Heritage from the Depths"

"The Indian Rose"

6.10.94

"Esprit De Corps"

"Tamil Nadu Archives – A Treasure House Par Excellence"

"A World of English : The Good Language Learner"

7.10.94

"New Horizons"

"Forest Settlements in Gir"

8.10.94

"Programme on Management"

"A Tree and A Creeper – Money for the Reaper"

"The Week Ahead"

Hindi Telecast

प्रातः 6.00 से 6.30 बजे तक

23.9.94

"समझ सिनेमा की – भाग 11"

26.9.94

"हवा में घुलता जहर"

"मैं भील हूँ"

28.9.94

"शिक्षा की रेल चली – I"

30.9.94

"समझ सिनेमा की – भाग 12"

3.10.94

"वामन वृक्ष – भाग I"

"सामूहिक विवाह"

5.10.94

"शिक्षा की रेल चली – II"

"छोटी-छोटी बातें"

7.10.94

"समझ सिनेमा की – भाग 13"

News from Abroad

Man-made Wheat

Wheat, the world's largest food crop, is on the brink of being genetically engineered for the first time by researchers at the University of Queensland (UQ).

Scientists in Australia and the United States have been working for a decade to introduce into wheat plants foreign genes that will increase disease resistance, raise protein quality and improve crop yield.

The UQ team, headed by Professor Ken Scott, is exploring two transfer methods. In one, immature wheat embryos are bombarded with micro-particles of tungsten coated with a herbicide-resistant gene.

"The embryos were then grown in tissue culture and later transferred to the soil as young plants," Professor Scott said. "We have been able to demonstrate the presence of the gene in the plants and they have set seed. Not only are they fertile, but preliminary results show that the gene has been passed on to the next generation of seedlings grown from the transformed plant."

The second method uses electroporation which involves giving the wheat cell an electric shock. This opens the pores in the living cells (protoplasts) from which the outer walls have been removed by enzymes, allowing

the foreign DNA to enter. The pores shut again and the DNA goes into the nucleus of the cell.

"We have regenerated plants from these transformed protoplasts and demonstrated the presence of the foreign herbicide-resistant gene," Professor Scott said. "These genetic engineering techniques have great potential for increasing the quality of the grain and also the yield. In the next 25 years, the major problem the world will face is feeding people with any sort of quality food. Producers have pretty well maximised the yields that can be produced."

Professor Scott said genetic engineering of crops was the big hope of solving the yield limits achieved by current cultivation conditions. It could introduce a wide range of useful foreign genes and could develop new strains much more rapidly than was possible with traditional breeding methods.

Curing Stomach Ulcers

A simple treatment that may cure stomach ulcers — for life — has been devised by medical researchers at Melbourne's Monash University.

The seven-day treatment of a "cock-tail" of yoghurt and common antibiotics is the latest and most novel weapon in a 10-year quest for an ulcer cure by the Monash scientists.

The team, led by Associate Professor John Lambert, was the first to disclose that duodenal and gastric ulcers were associated with a bacterial infection. Previously, it had always been as-

sumed that the ulcers were caused by excess gastric acid in the stomach. The treatment was the intake of acid-suppressing drugs which brought temporary relief but saw a recurrence of the ailment within a year.

An alternative, effective therapy with few side-effects, now exists that kills a vital bacteria, *Helicobacter pylori*, believed to be the cause of ulcers. Dr Lambert's treatment, which comprises bismuth and two antibiotics administered over seven days, has killed the bacteria in 80 per cent of patients who have not suffered a recurrence over an extended period.

The team has tested 50 *lactobacilli*, bacteria with natural antibiotic action living in the human gut. Six which kill *Helicobacter* have been identified and yoghurts containing them are being prepared for human trials.

We Congratulate

Prof I Yanger Ao, who has been appointed the first Vice Chancellor of the Nagaland University.

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BOOK REVIEW

Quality Comparative Analysis of Education and Development

Santosh Panda*

Tilak, Jandhayala B.G. (1994) *Education for Development in Asia*. New Delhi, Sage Publications. Pp. 247. Rs. 275.00

The book under review is a critical comparative study on the relationship between various levels of education and development in the Asian region comprising countries of Japan (most developed country), Hong Kong, South Korea, Singapore, Taiwan (all newly industrialising countries), Malaysia, Thailand (both second-tier industrialising economies), Philippines, Indonesia (both developing economies), China, Vietnam (both economically poorer countries), India, Pakistan, Bangladesh, Bhutan, Myanmar (Burma), Nepal and Sri Lanka (all from the South Asian region). While education has been referred to at all levels (primary to higher), development indicators include return to education, agricultural productivity, poverty and income distribution, unemployment, health and nutrition, and political development. The study had two broad objectives, i.e. to study the growth of education in the last three to four decades, and to examine the impact of the growth of education on development. The book is

arranged in five parts, comprising eleven chapters, viz. "Part I: Background" with two chapters (introduction; background profile of Asia), "Part II: Development of Education" with two chapters (state of educational development in Asia; investment in education), "Part III: Contribution of Education to Development" with six chapters (returns to education; education and agricultural productivity; education, poverty and income distribution; education and unemployment; education, health, nutrition and demographic changes; education and political development), "Part IV: Towards Improvement" with one chapter (summary and conclusions), "Part V: Statistical Appendix," followed by selected list of symbols and abbreviations, bibliography, and index.

In the first chapter "Introduction", the early works on the relationship between education and development have been briefly summarised, the problem under investigation has been recorded, the sources of data and the limitations have been noted, and the plan of the study has been put forward. The per cent study is based on data available from various documents of UNESCO,

World Bank, UNDP, UNICEF and United Nations, supplemented by various published and unpublished materials and national statistical publications. Though it is difficult to compare data across countries, which vary in definitions, coverage, methods, time, relevant age group, etc, these very data have been used in this study because, after collection from each country, these data are "made somewhat comparable" by UNESCO and World Bank. The author justifies thus: "However, data collected from several national sources are in no way better and are obviously less comparable across countries. As a result, there is no option but to use the available cross-country data" (p. 22).

The developmental profile of Asia has been presented in the second chapter, including the heritage of this region and the indicators of human development. While Singapore and Hong Kong are urban-based, countries like Nepal, Bhutan, Thailand, Vietnam, Indonesia, India and China are rural-based. The GNP per capita in the industrial countries (US\$ 17,017) contrasts unfavourably with that in South-east Asia (\$ 845), East Asia (\$ 545) and South Asia (\$ 458). The author notes, "Two-thirds of the world's poor live in the South-Asian region. A quarter billion people, or more than half the world's poor, live in India" (p. 31). While South Korea shows a growth rate of 7.1 per cent in per capita GNP during 1965-90, during the same period the figures for Nepal, Bangladesh and India have been 0.5, 0.7 and 1.9 per cent respectively.

*Director, Research Division, Association of Indian Universities, New Delhi-110 002.

In the third chapter "The State of Educational Development in Asia", the author has discussed the uneven growth of education, universal primary education vs post-primary education, gender differences in education, and composite indicators of educational development. While in 1960 the share of Asia in total enrolment in the world was 35.5 per cent, it has increased to 53.2 per cent in 1990; the growth during this period for North America and Europe stands at 0.9 per cent and 2.4 per cent respectively, though it has been 5.5 per cent in the Asian countries put together. However, the gross enrolment ratio was highest (91.8%) for North America, and lowest for Africa (41.6%), with 54.1 per cent for Asia. Within the Asian nations, with Japan having full literacy and China having two-third population as literate, South Asia is predominantly illiterate, though in Sri Lanka and Burma nearly 80 per cent are literate. Male-female inequality in education is high in the Asian region, and women literacy is nearly half of that of men in South Asia. Though literacy is a crude indicator of educational development, in the context of education and development, a better indicator is the mean year of schooling of the labour force. While in Japan the mean year of schooling of the population is 10.7 years, in Maldives and Pakistan those from the labour force having secondary education constitute only 1.6 per cent and 0.6 per cent respectively; and the mean year of schooling of the labour force is 1.9 in India. While comparing the two most populous countries in Asia, i.e. China and India, the author remarks the following :

"China emphasized primary and lower secondary education, while India expanded higher education at a relatively low cost but at a much faster rate. As a result of these policies, China was able to increase the literacy rate from 20 per cent in 1949 to more than 70 per cent in 1990, while India progressed from 17 per cent in 1951 to about 50 per cent in 1991. China's educational expansion, particularly of secondary and higher education in the recent period, is more closely tied to economic needs, whereas India's is not. The most difficult decisions, however, that both countries must now take are in regard to secondary education. China plans to universalise junior secondary education by making it compulsory and to vocationalise secondary level education. India's plan to vocationalise secondary education ... has been a non-starter and secondary education in general has not received any serious attention..." (p.55)

The author concludes that expansion and universalisation of primary education is possible if the growth of higher education is checked, and chalking out of proper strategies of educational development would be able to help overcome the socio-cultural and religious barriers to education.

Insofar as investment in education is concerned, which has been presented in the fourth chapter, while North America, at current prices, spends 6.8 per cent of its GNP on education, the figures for Asia and developing countries

as a whole are 5.2 and 3.9 per cent respectively. In South Asia, there have been four patterns of growth of expenditure: increasing growth in GNP with decreasing expenditure on education, negative growth in GNP with positive growth in expenditure, negative growth in GNP with negative growth in expenditure, and positive growth in GNP with positive growth in educational expenditure. During 1974-76, India had a situation of negative growth in GNP, but positive growth in expenditure on education. In terms of per student expenditure, higher education is just 1.1 times primary education in Korea while it is 15 times in South Asia.

The fifth chapter deals with returns to education. The empirical evidence reviewed by the author reveals that investment in education leads to higher economic growth than that in physical capital; and the rate of return is higher in primary education, followed by secondary and higher education. The higher the rate of development of countries, the lower is the rate of return to investment in education; and this is attributed to the scarcity of human capital in the developing countries. At all levels of education, private returns to education are higher than the social returns; and in the Asian countries, the rates of return show under-optimum levels of investment in education. The evidence further shows that education is a productive investment in the Asian countries.

Chapter six deals with education and agricultural productivity. Research methodologies on this area have been reviewed and empirical research evidence pre-

sented. The author concludes that education has significant influence on the methods of production, use of modern inputs and selection of crops. At around ten years of schooling, the impact of education becomes significant with regard to farm efficiency, utilisation of credits, better methods of farming, etc. There had also been impact of non-formal education, though coupled with some non-educational factors.

Education, poverty and income distribution have been discussed in the seventh chapter. While 67 per cent of population in Burma is with no schooling alongwith 53.6 per cent people below the poverty line, in India 72.2 per cent of population is without schooling alongwith 44.5 per cent people below the poverty line. In contrast, in South Korea while 72.6 per cent people are without schooling, only 5.5 per cent people are below the poverty line. Data from Burma, Thailand and Taiwan show that with increasing levels of education, poverty declines. Further, in Thailand, for instance, nearly 99 per cent of the poor have no or less than middle level education. The author, after examination of the data, concludes that "education has great potential for reducing poverty, particularly in rural areas of Asia". Also, education is an important measure to reduce income inequalities. The author remarks that the public subsidies should be diverted from higher education to school education, and these should be targeted to the weaker sections of the society.

In the eighth chapter, the author analyses the relation

between education and unemployment. While analysing this relationship, the author cautions us regarding the variations in the interpretation of the phenomenon of "unemployment" across countries in Asia. Further, he has taken into consideration "open unemployment" in the "formal sector". The author suggests that further analysis of education and unemployment should take into consideration the demographic, social, political and economic factors.

The ninth chapter deals with education, health, nutrition and demographic changes. The research evidence suggests the positive effect of education on child survival and general health condition. There is also significant effect of education on fertility and population growth. Moreover, the effect is highly positive in case of female literacy.

Chapter ten includes analysis of education and political development — democracy, political stability, political and civil rights, and human freedom. The author concludes that "the evidence on the role of education in political development in Asian countries seems to be mixed but not altogether discouraging". As a contrast, in China, there is low politi-

cal democracy but high level of literacy; in Burma, there is both high political destabilization and high literacy rate (i.e. 81%). The author suggests that higher mean years of schooling has been a factor "in protecting and strengthening democracy and also in reducing instability". Further, education does not seem to have a significant impact on political and civil rights.

In the last chapter, "summary and conclusions", the author has drawn significant policy implications for the Asian countries, identified the gaps in research and information, and given some suggestions on areas for further investigation.

The tables given in the "statistical appendix" part containing very important, detailed and latest data on various aspects of analysis on education and development should be of high use to the researchers, practitioners and policy makers. Similarly, the exhaustive, comprehensive, latest and relevant references given in the bibliography is a rich harvest to both readers and researchers.

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THESES OF THE MONTH

A list of doctoral theses accepted by Indian Universities

Biological Sciences

ANTHROPOLOGY

1. Dasgupta, Indrajit. A family study of some anthropometric traits in a rural population of West Bengal, India. Calcutta.

ENVIRONMENTAL SCIENCES

1. Gupta, Bikal Kumar. Studies on fractionation and characterisation of some organic contaminants in river Yamuna around Delhi. JNU. Dr A K Bhattacharya.
2. Mohan, R. Hydrobiological studies on the Ooty Lake, Uthagamandalam, Tamil Nadu with special reference to pesticide pollution and its impact on the phytoplankton. Madras. Dr V N Raja Rao.
3. Pani, Balaram. Speciation of some selected heavy metals in the ash pond overflow and leachates from a thermal power plant. JNU. Dr D K Banerjee.

MARINE SCIENCES

1. Mathew, Susan. Hypoxic adaptations and carotenoids of two intertidal molluscs. Cochin. Dr R Damodaran, Prof, School of Marine Sciences, Cochin University of Science and Technology, Kochi.

BIOLOGY

1. Asha, H. Genetic and molecular characterization of osmoregulatory genes in *Escherichia coli* : Studies of mutations in Kdp operon and other K⁺-transport genes. JNU. Dr J Gowrishankar.
2. Panicker, Shirley George. Isolation and characterization of Bkm satellite DNA from snake, *Bungarus fasciatus* and a Bkm associated Y chromosome-specific clone M 34 from mouse. JNU. Dr Lalji Singh.

BIOCHEMISTRY

1. Chitra, M. Biochemical studies on the effect of embelin on experimental fibrosarcoma. Madras. Dr C S Shyamaladevi.
2. Kukreti, Ritu Shree. Histological and biochemical studies on the effect of nickel in biological systems. Roorkee.
3. Lakshmi, R. Biochemical studies on the developing brain in relation to goitrogen induced altered thyroid status. Osmania.
4. Luthra, Manni. Covalent modifications of eye lens proteins by oxidation and glycation. JNU. Dr D Balasubramanian.
5. Manjula, T S. Biochemical studies on the effect of aspirin on lysosomal and mitochondrial alterations in experi-

mental myocardial infarction in rats. Madras. Dr C S Shyamaladevi.

6. Ramesh, Gadiraju. Effect of cis-unsaturated fatty acids on tumour cells *in vitro* and *in vivo*. Osmania.

7. Reddy, Padmalatha S. Control of transcription at the rRNA promoters : Mapping of the regulatory molecule and substrate binding sites on *E coli* RNA polymerase. JNU. Dr D Chatterji.

8. Sridhar, T S. Study of tyrosine-specific protein kinases and phosphatases in AK-5. JNU. Dr Ashok Kumar.

9. Uma Devi, K. Hypersensitive, peptide bonds : Role in autodegradation of proteins. JNU. Dr P M Bhargava and Dr S Shivaji.

BIOTECHNOLOGY

1. Mukherjee, Krishna Jyoti. Stability studies of plasmid vectors of coryneform bacteria. IIT Delhi. Prof K B Ramachandran and Dr J K Deb, Department of Biochemistry and Biotechnology, Indian Institute of Technology, Delhi.
2. Srivastava, Aradhana. Extractive lactic acid bioconversion using ion exchange resin. IIT Delhi. Dr Vikram Sahai and Dr Pradip K Roy Choudhury, Biochemical Engineering Research Centre, Indian Institute of Technology, Delhi.

MICROBIOLOGY

1. Kekre, Shobha. Studies on the potentiality of *Bacillus thuringiensis* in integrated management of gram pod borer. Durgawati.
2. Mallikarjun, Naikar. Prevalence, immunological studies and utility of cross reacting antigens in the diagnosis of filariasis. Madras. Dr T Sundararaj.
3. Patel, Beena N. Studies on microbial degradation of cellulosic and lignocellulosic wastes. Patel. Dr K C Patel.
4. Shivraj, D. Studies on anaerobic digestion process of poultry litter waste and utilization of fatty acids in the presence of added cultures and trace metals. Osmania.

BOTANY

1. Aggarwal, Hariprasad. Study of wheat, *Triticum aestivum* weed association, competition and control of weeds by cultural and chemical methods. Ghasidas. Dr A M Aggarwal, Guru Ghasidas Vishwavidyalaya, Bilaspur.
2. Anjaneyulu, S. Studies on soil survival of *Colletotrichum graminicola* (Ces) G W Wilson. Osmania.
3. Belapurkar, Uday. Taxonomic studies on the ascomyce-

tes with special reference to family Diatrypaceae associated with forest plants of Mandla Region. Durgawati.

4. Bhuyan, Debajyoti. Effect of time and method of application of urea on uptake and assimilation of nitrogen in relation to grain and grain yields in rice, *Oryza sativa* L. Gauhati. Dr C M Sarmah, Prof and Head, Department of Botany, Gauhati University, Guwahati and Dr R C Borah, Assoc Prof, Department of Biochemistry, Assam Agricultural University, Jorhat.

5. Dhakarwal, Sunita. Studies on physiology of natural and induced nodule senescence. HAU.

6. Kishore, Lovely. Biology and taxonomy of root and stem-nodulating *Rhizobium* gene pools of some species of *Sesbania*, *Aeschynomene* and *Neptunia*. Delhi.

7. Mani, T. Studies on some galls induced by eriophyid mites in southern India (Arachnida : Acari : Eriophyoidea). Madras. Dr T N Ananthakrishnan.

8. Mishra, Ramesh Kumar. Studies on the effect of nitrogen and irrigation schedules on yield of wheat in Surguja region. Ghasidas. Dr M F K Khokhar, Govt Science College, Bilaspur.

9. Rathore, Sanjai Kumar Singh. Resource utilisation patterns in a Central Himalayan Catchment. Kumaun. Dr J S Singh.

10. Sarbajna, Kanakkumar. Studies on the hyphomycetous fungi of West Bengal. Calcutta.

11. Srinivas, C. Plant biomass, net primary productivity and nutrient cycling in Oak, *Quercus serrata* forests of Manipur. Manipur. Prof P S Yadava, Department of Life Sciences, Manipur University, Manipur.

12. Surekha Rani, P. Ecological and biochemical aspects of algae with special reference to water quality and pollution. Osmania.

13. Verma, Neeraj. Evidence for the De novo synthesis and phosphorylation of poly (A) polymerase in germinated wheat embryos : Crucial role of phosphorylation in enzyme regulation. Delhi.

AGRICULTURE

1. Amir Singh. Resistance studies in bittergourd against fruitfly. HAU.

2. Ashwini, Kumar. Effect of post harvest treatments of ripening behaviour of mango, *Mangifera indica* Cv dashchari. HAU.

3. Gulab Singh. Integrated use of mineral fertilizers and organic manures in a wheat-maize cropping sequence. H P Krishi.

4. Kadam, Jijabao Ramrao. Management of *Earias vittella* Fabricious on okra. M P Krishi. Dr V M Kheire, Assoc Dean, College of Agriculture, Pune.

5. Maiti, Siddharthasankar. Evaluation and utilisation of fly ash as useful material in agriculture. Calcutta.

6. Meganathan, P. Taxonomic studies on aleoerodid fauna (Aleoerodidae : Homoptera) of Silent Valley, a tropical evergreen rain-forest, in Kerala State, India. Madras. Dr B Vasantharaj David.

7. Naikare, Baban Dinkar. Studies on part lactation and lifetime milk production in two and three breed GIr crosses. M P Krishi. Dr K M Kale, Head, Department of Animal Science and Dairy Science, Mahatma Phule Krishi Vidyapeeth, Rahuri.

8. Palimkar, Vishwas Krishna. Morphophysiological basis of resistance to whitefly, *Bemisia tabaci* Gennadius on some cotton cultivars. MAU. Dr S N Puri, Head, Department of Entomology, Marathwada Agricultural University, Parbhani.

9. Ram Swarup. Response of wheat and winter maize to irrigation and fertility levels under shallow water table conditions. HAU.

10. Ramesh Kumar. Studies on the effect of packaging, fungicides and volatiles on shelf-life of kinnow fruits. HAU.

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12. Sit, Dwijadas. Studies on some aspects of agronomy of crops grown in Chhotanagpur Plateau. Calcutta.

ZOOLOGY

1. Abdul Kader, P B. Studies on the fish and fisheries of the inland waters of Trichur District, Kerala. Calicut. Dr C K Gopinathan Nayar, Department of Zoology, Christ College, Irinjalakuda.

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5. Dutta, Jayanti. Karyotypic studies on some species of aphids (Homoptera : Aphididae) from Himachal Pradesh. HP.

6. Dwivedi, Jyoti. Enzymological study on the degradation of insect cuticle during moulting. Jiawaji. Dr O P Agrawal, Department of Zoology, Jiawaji University, Gwalior.

7. Huda, Ruksana. Clonal evaluation of S 180 tumor cell line before and after selective drug pressure. Burdwan. Dr Samar Chakraborty, Department of Zoology, University of Burdwan, Burdwan.

8. Jaina Bai, G. Certain biochemical studies in sweet potato weevil, *Cylas formicarius* F. Osmania.

9. Jasvinder Kaur. Some aspects of the biology and neuroendocrine control of reproduction in a fresh water prawn of Tarai Area. Kumaun. Dr S Kumar.

10. Kanakiah, R. Comparative histomorphological and histochemical studies in gastropod and bivalve molluscs. Kakatiya, Prof T Rajendranath, Department of Zoology, Kakatiya University, Warangal.

11. Krishna, T. Effect of pesticides on the sweet potato weevil, *Cylas formicarius* T. Osmania.

12. Malini, P. Investigations on certain biochemical genetic and epidemiological factors in ischemic heart disease. Osmania.

13. Nalini, G S. Neurophysiological changes accompanying experimental undernutrition and subsequent rehabilitation on the developing brain of albino rat. Bangalore. Dr Nayeemunnisa, Department of Zoology, Bangalore University, Bangalore.

14. Nayek, Tapan Kumar. Life history, host specificity and phenology of *Altica cyanea* Weber (Coleoptera : Chrysomelidae). Burdwan. Dr T C Banerjee, Department of Zoology, University of Burdwan, Burdwan.

15. Omer, Sabiha. Studies on trematode parasites of marine fishes and reptiles. Osmania.

16. Paliwal, Gopal N. Studies on the neuroendocrine and reproductive systems in the rock honeybee, *Apis dorsata* F. Nagpur. Dr D B Tembhare, Department of Zoology, Nagpur University, Nagpur.

17. Rajamannar. Toxicity of the organochlorine and two organophosphate compounds on the metabolism of the fingerlings of the Indian major carp rohu, *Labeo rohita* Hamilton. Madras, Dr L Manohar.

18. Raman, C. Bio-ecological studies on *Oxyrhachis uncinatus* Melichar, *Otinotus indicatus* Melichar and *Anchon ulniforme* Buckton (Homoptera : Membracidae). Madras. Dr K S Ananthasubramanian.

19. Ravichandran, P. Studies on the growth and nitrogen metabolism of the jumbo tiger prawn, *Penaeus monodon* Fabricius (Crustacea : Decapoda) in relation to ambient H, salinity and ammonia. Madras. Dr G Durairaj.

20. Sardana, Rashmi. A physiological study on the larval serum protein of some dipteran during post embryonic development. Jiwaji. Dr O P Agrawal, Department of Zoology, Jiwaji University, Gwalior.

21. Satti Reddy, Karri. Comparative studies on the ecology and biology of *Myxus* species (Teleostei : Bagridae) from Mehadrigeedda Stream of Visakhapatnam. Andhra.

MEDICAL SCIENCES

1. Arjmand, Mohammad. Endocrine, biochemical and histological studies on the effect of solasonine- A plant alkaloid on testis. Madras. Dr P Govindarajulu.

2. Bhugra, Praveen Prannath. Interaction of calcium channel blockers with different agonists in relation to sources of calcium and possible receptor modulation. Patel. Dr O D Gulati.

3. Mandal, Prabir Kumar. Cytogenetic investigations on human reproductive wastage and infertility. Barkatullah. Dr H K Goswami, Department of Genetics, Barkatullah Vishwa Vidyalaya, Bhopal.

4. Velvizhi, R. Generation of monoclonal antibodies to estrogen receptor and their application in the study of breast cancer. Anna.

ANIMAL HUSBANDRY

1. Changade, Sudhakar Pundlikrao. Utilization of high acidic milk of cow and buffalo for ghee preparation. Punjabrao Krishi. Dr R V Tambat, Assoc Prof, College of Dairy Technology (Warud), Pusad.

2. Felix, S. Pathobiology and therapeutics of farm reared shrimps. TN Vet. Dr V Sundararaj, Prof and Head, Department of Aquaculture, Fisheries College and Research Institute, Tuticorin.

3. Gumble, Sudhakar Namdeoao. Evaluation of 'V' strain of white leghorn selected over six generations and its comparison under random mating. Punjabrao Krishi. Dr R N Deb, 361 Shankar Nagar, Nagpur.

4. Kanwar, Om. Induced lactation response and related circulating hormone profile in adult non-reproducing buffalo heifers to estradiol and progesterone administration. HAU.

5. Moulvi, Bashir Ahmed. Comparative studies on systemic and/or local treatment of infectious arthritis in cattle. HAU.

6. Rekhate, Digamber Harishchandra. Nutritional studies on some forage vegetations with particular reference to selective grazing of sheep and goats. Punjabrao Krishi. Dr J D Honmode, Dean, Veterinary Science, Punjabrao Krishi Vidyaapeeth, Akola.

7. Suresh, R. Optimum farm plans for aquaculture production, planning and budgeting approach. TN Vet. Dr V Sundararaj, Prof and Head, Department of Aquaculture, Fisheries College and Research Institute, Tuticorin.

8. Venkataswamy, M. Biology and dynamics of fresh water prawn, *Macrobrachium malcolmsoni* L (H Milne Edwards 1944). TN Vet. Dr K Venkataramanujam, Dean, Fisheries College and Research Institute, Tuticorin.

CURRENT DOCUMENTATION IN EDUCATION

A list of select articles culled from periodicals received in the AIU Library during August 1994

EDUCATIONAL PSYCHOLOGY

May, Kathleen M and Loyd, Brenda H. Honesty tests in academia and business : a comparative study. *Research in Hr Edn* 35(4), 1994, 499-511.

Sassower, Raphael. On madness in the academy. *J of Hr Edn* 65(4), 1994, 473-85.

EDUCATIONAL PLANNING

Fletcher, John. Research, education policy and the management of change. *Oxford Rev of Edn* 20(1), 1994, 57-80.

Margetson, Don. Current educational reform and the significance of problem-based learning. *Studies in Hr Edn* 19(1), 1994, 5-19.

Mehta, Arun C. Education for all : Enrolment projections in India. *J of Ednl Plann and Admn* 8(1), 1994, 63-79.

EDUCATIONAL ADMINISTRATION

Elsworth, Gerald R. Confronting the biases in connoisseur review and performance indicators in higher education : A structural modelling approach. *Hr Edn* 27(2), 1994, 163-90.

Grossley, Michael and others. Implementing the process of modularisation in higher education : Some trans-national issues. *Hr Edn Q* 47(4), 1993, 334-56.

Hyatt, James A. Strategic restructuring : A case study. *New Directions for Hr Edn* 21(3), 1993, 35-42.

Jain, S P. Decentralisation, panchayati raj and education. *J of Ednl Plann and Admn* 7(4), 1993, 413-26.

Rege, Awinash. Interaction between institution and industry. *Indian J of Tech Edn* 16(3), 1993, 43-7.

Seymour, Daniel. The baldridge cometh. *Change* 26(1), 1994, 16-27.

Shivaram, M N. Viable modalities for interaction between academia, R & D laboratories and industry. *Indian J of Tech Edn* 16(3), 1993, 37-42.

Woodrow, Maggie. Franchising : The quiet revolution. *Hr Edn Q* 47(3), 1993, 207-20.

TEACHERS & TEACHING

Davidson, Cathy N. Laughing in English. *Academe* 79(6), 1993, 19-22.

Govinda Reddy, B. The need for tutorials in Indian higher education. *Experiments in Edn* 22(6), 1994, 128-33.

EDUCATIONAL RESEARCH

Harris, Geoff and Kaine, Geoff. The determinants of research performance : A study of Australian University economists. *Hr Edn* 27(2), 1994, 191-201.

Nedwek, Brian P and Neal, John E. Informational cultures : Facing challenges of institutional research within cross-continental settings. *Research in Hr Edn* 35(4), 1994, 429-42.

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Connolly, Frank W. Who are the electronic learners ? : Why should we worry about them ? *Change* 26(2), 1994, 39-41.

Ehrmann, Stephen C. Making sense of technology : A dean's progress. *Change* 26(2), 1994, 34-8, 52-3.

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Ansari, M M. Strategy of funding higher education : Areas

and directions for reforms. *J of Ednl Plann and Admn* 8(1), 1994, 87-101.

Atwell, Robert H. Higher education and the path to progress. *New Directions for Hr Edn* 22(1) 1994, 125-32.

Bruce Johnstone, D. Financing liberal learning : The role for government. *New Directions for Hr Edn* 22(1), 1994, 93-9.

Gurbachan Singh. Fees and economic background of students: a study of University of Delhi. *J of Ednl Plann and Admn* 7(4), 1993, 427-51.

Jones, Dennis P. Strategic budgeting. *New Directions for Hr Edn* 21(3), 1993, 5-16.

McPherson, Michael S and Schapiro, Morton Owen. The search for morality in financial aid. *Academe* 79(6), 1993, 23-5.

Selvaratnam, V. A strategy for greater self-financing of higher education in India. *J of Hr Edn* 17(1), 1994, 85-100.

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CLASSIFIED ADVERTISEMENTS

S.K. UNIVERSITY OF AGRICULTURAL SCIENCES & TECHNOLOGY

SHALIMAR CAMPUS,
SRINAGAR-191 121

ADVERTISEMENT NO: 01 of 1994

Applications are invited for the posts of Assistant Professor-cum-Junior Scientists in the UGC Pay scale of Rs. 2200-4000 plus allowances as admissible under rules in different disciplines of Agriculture and Veterinary Sciences and Animal Husbandry on prescribed forms.

Last date for receipt of application is 31st October, 1994. Further details and application forms may be had from the Office of Registrar, Sher-e-Kashmir University of Agricultural Sciences and Technology, Main Campus, Shalimar, Post Box No. 262, Srinagar - 191 121/Deputy Registrar, Camp Office, Railway Road, Jammu-180 004. Those seeking details by post, may please send self-addressed and duly stamped envelop 10" x 4"

H.M. Tahir
REGISTRAR

No. Au/Adm/AR (R & C)/94
Dt : 23.8.1994

SHIVAJI UNIVERSITY KOLHAPUR

ADVERTISEMENT

Applications are invited for One Junior Research Fellow (Salary : Rs. 2500/- P.M. plus HRA), under the Department of Science and Technology (DST), Govt. of India, funded project entitled "Development and characterisation of thick film microstripline elements for high frequency microwave integrated circuits" for a period of three years.

Interested candidates having M.Sc (Physics) with first class [Preference will be given to NET/GATE qualified candidates] should send their Bio-data on plain paper regarding date of birth, academic qualifications etc. to the PRINCIPAL IN-

VESTIGATOR, DR. (MRS.) VIJAYA
PURI, DEPARTMENT OF PHYSICS,
SHIVAJI UNIVERSITY, KOLHAPUR -
416004, M.S., within 20 days from the
date of this advertisement.

Kolhapur
Date: 5.9.1994

Dr. B.P. Sabale
REGISTRAR

UNIVERSITY OF JAMMU

VACANT POSITIONS

Applications in the prescribed form obtainable from the University Office are invited for the following vacant posts so as to reach the undersigned on or before 15.10.1994.

1. Professors (Rs. 4500-7300) = 6 posts

One each in Chemistry, Management Studies, Mathematics, Hindi and two in English.

2. Readers (Rs. 3700-5700) = 5 posts

Three in Physics and one each in Commerce and Zoology.

3. Lecturers (Rs. 2200-4000) = 5 posts

One each in Chemistry, Management Studies (Production and Material Management), Statistics (Lien Bound but likely to be lien free) and two likely in Zoology.

4. Prof.-cum-Librarian (Rs. 4500-7300) = 1 post

5. Project Engineer Electronics in Physics (DSA) (Rs. 3700-5700) = 1 post.

The medium of instruction is English in all subjects except in Sanskrit and Modern Indian Languages.

Prescribed application forms and other details can be obtained from Assistant Registrar (Forms & Stationery) by sending a self addressed envelope (25 cms x 10 cms) bearing postage stamps worth Rs. 12/- alongwith crossed Postal Order/Bank Draft worth Rs. 75/- drawn in favour of the Registrar, University of Jammu - 180 004 encashable at Jammu Post-Office/Bank.

REGISTRAR

THE UNIVERSITY OF BURDWAN RAJBATI : BURDWAN WEST BENGAL

Advertisement No. 7/94-95 Dated, 8th September, 1994. Applications in the prescribed form are invited for the post of Inspector of Colleges, University of Burdwan. Scale of Pay - Rs. 4500-150-5700-200-7300/-. The post carries Dearness and other admissible allowances according to the University Rules. Educational Qualifications & Experience : Essential: (i) Uniformly good academic record with a B+ Master's Degree or its equivalent. (ii) At least 15 years' experience in Academic Institution like University or in an Institute of higher learning of which 5 years must be in high level administration in a University or in an Institute of Post-graduate Study. (iii) Age not less than 40 years. Relaxable in the case of exceptionally qualified candidates. Desirable : (i) A Doctorate Degree or published research work of merit; Or (ii) High level administrative experience in a Government or Quasi-Government organisation or a good background in Administration and management in senior position. (iii) Essential to have experience in administration of Colleges desirably in a position not less than that of a Principal of a College. Prescribed application forms may be obtained from Rajbati, University of Burdwan personally on payment of Rs. 20/- in Cash at the University Sales Counter from 11 a.m. to 1-30 p.m. on working days (except 2nd and 4th Saturday) or by sending a self-addressed stamped (Rs. 2/-) envelope (11" x 9") accompanied by Crossed I.P.O. of Rs. 20/- drawn in favour of Finance Officer, University of Burdwan. Last date for submission of applications to the Registrar, University of Burdwan, Rajbati, Burdwan-713 104 with requisite fee of Rs. 25/- payable in the manner indicated above is 7.10.94.

REGISTRAR

INDIAN COUNCIL OF MEDICAL RESEARCH

Applications are invited upto 31st October, 1994 for the following posts under the Council's Institutes/Centres:

(A) AT THE NATIONAL INSTITUTE OF VIROLOGY, PUNE:

1. **DEPUTY DIRECTOR (PATHOLOGY)** - (One Post) (Scale of pay of Rs.4500-150-5700) **Qualifications & Experience:** Essential: M.B.B.S. with 12 years research/teaching experience as evidenced by good quality publications (10 years research/teaching experience for candidates possessing M.D. (Pathology)/Ph.D.(Pathology)). Original work as evidenced by good quality of publications. **Job Requirements:** To guide, formulate & carry out studies on pathology and pathogenesis of virus infections in man and experimental animals as part of the research programme of the Institute. The incumbent will be able to carry out field investigations any where in India for any period of time, as may be required.

2. **SENIOR RESEARCH OFFICER (EPIDEMIOLOGY)** - (One Post): (Scale of pay of Rs.3000-100-3500-125-4500) **Qualifications & Experience:** Essential: M.B.B.S. with 6 years research/teaching experience especially in the field of epidemiology (2 years research/teaching experience for candidates possessing M.D. in Preventive & Social Medicine.) **Job Requirements:** To carry out studies of Epidemiology of viral diseases in India. The incumbent should be able to assist in the formulation and execution of the research programmes of the Institute. The incumbent is expected to carry out field investigations anywhere in India for the required period of time.

(B) AT THE REGIONAL MEDICAL RESEARCH CENTRE, PORT BLAIR:

1. **DEPUTY DIRECTOR** (One post) (Scale of pay of Rs.4500-150-5700) **Qualifications & Experience:** Essential: M.B.B.S. degree with 12 years research/teaching experience in Community Medicine/ Public Health/Preventive & Social Medicine, or M.D. degree in Preventive & Social Medicine/Community Medicine with 10 years total experience after M.B.B.S. Original research work as evidenced by publications. **Administrative experience.** **Job Requirements:** (a) To assist the Director of the Centre in planning and implementation of the research activities of the Centre, which would involve extensive field work as well as interaction with other ICMR Institutes/Centres and the local Administration, (b) To assist the Director of the Centre in administration of the Centre.

2. **SENIOR RESEARCH OFFICER** - (One Post) (Scale of pay of Rs.3000-100-3500-125-4500) **Qualifications & Experience:** Essential: (1) M.B.B.S./1st class M.Sc. in Microbiology/Parasitology (2) 6 years research/teaching experience (2 years research/teaching experience for candidates possessing M.D./Ph.D. in the relevant field). **Job Requirements:** To participate in planning and implementation of research in the field of communicable diseases, particularly parasitic diseases. Candidate with experience in diagnostic microbiology/parasitology will be preferred.

(C) AT THE INSTITUTE OF IMMUNOHAEMATOLOGY, BOMBAY:

SENIOR RESEARCH OFFICER (MEDICAL) - (One post) (Scale of pay of Rs.3000-100-3500-125-4500) **Qualifications & Experience:** Essential: M.B.B.S. with 6 years research/teaching experience in subject of Immunohaematology or M.D. in Medicine or Pathology

with two years research/teaching experience in Immunohaematology. **Job requirements:** To undertake research in the field of Immunohaematology.

(D) AT THE REGIONAL MEDICAL RESEARCH CENTRE, BHUBANESWAR.

SENIOR RESEARCH OFFICER - (4 posts) (Scale of pay Rs.3000-100-3500-125-4500) **Post No.1- SRO. (Microbiology)** **Qualifications & Experience:** Essential: MBBS/1st class M.Sc. in Microbiology with 6 years research/teaching experience in medical microbiology and molecular biology. (Two years research/teaching experience required for candidates possessing M.D./Ph.D. in relevant field). **Desirable:** Experience in the investigation of diarrhoeal disorders, Japanese encephalitis, HIV/AIDS and other communicable diseases. Ability to screen high risk groups for HIV/AIDS seropositivity will be an advantage. **Job Requirements:** To participate in planning and implementation of research programmes in the field of medical microbiology and immunology of various communicable disorders. Diagnostic microbiology would be a major job responsibility.

Post No.2- SRO (Nutritional Sciences) **Qualifications & Experience:** Essential: M.B.B.S./1st class M.Sc. in Chemistry/Bio-Chemistry/Foods and Nutrition with 6 years research/teaching experience in studies relating to nutritional status of communities and nutritional chemistry (Two years research/teaching experience required for candidates possessing M.D./Ph.D. degree in the relevant fields). **Desirable:** Research experience in problems like nutritional anaemia, goitre and Vitamin A deficiency is desirable. Ability to develop socially relevant intervention programmes. **Job Requirements:** To assist in planning and implementing community nutritional surveys and to carry out nutritional chemistry investigations in the laboratories. This job involves extensive touring of tribal areas in the region apart from laboratory work.

Post No. 3 - SRO (Social Sciences) **Qualifications & Experience:** Essential: 1st class M.Sc./M.A. in Anthropology/Social Sciences with 6 years research/teaching experience in studies relating to anthropological and social perspectives of health and nutritional problems of communities. (Two years research/teaching experience required for candidates possessing Ph.D. in the relevant fields). **Desirable:** Research experience in the social, cultural and economic aspects of health problems of the region. **Job requirements:** To participate in planning & carrying out sociological studies in relation to health and nutritional problems among various communities in the region. Extensive touring of tribal areas in the State of Orissa and neighbouring States will be an inherent part of the job.

Post No.4 -SRO(Epidemiology) **Qualifications and Experience :** Essential: M.B.B.S. with 6 years research/teaching experience in the epidemiology of communicable and non-communicable diseases (Two years research/teaching experience required for candidates possessing M.D. in P.S.M./Community Medicine). **Desirable:** Experience in epidemiology of Malaria, malaria and other vector borne diseases. **Job requirements:** To assist in organising community studies on various health problems of the region including investigations of epidemics/outbreak of illness, and to develop feasible intervention packages.

Age: Below 50 years for the post of Dy. Director & below 45 years for the posts of Sr. Research Officers. SC/ST candidates allowed relaxation in accordance with Govt. of India rules in force. Candidates belonging to SC/ST communities will have to furnish certificates from prescribed authority in the required format printed at page 345 of the brochure on reservation of SC & ST in services which can be supplied on demand failing which they will not be entitled to the concession admissible to them, if any. Since it is not possible to call all the eligible candidates for the interview, the applications will be shortlisted for the purpose and the decisions of the Director General will be final. The number of vacancies to be filled may vary at the time of actual selection. In the event of non-availability of suitable candidates for advertised posts, the positions can be filled up at lower level. Allowances as per Central Government rules are admissible on the above pay scales. For the staff stationed at Port Blair, - (Islands Special Allowance @ 12.5% of the basic pay besides special Compensatory Allowance, Leave Travel Concession once in two years to Home Town, Annual Free Sea passage are also admissible as per rules and Mainland recruited officers for Port Blair are also entitled to rent free residential accommodation). Benefits of pension are admissible as per rules in force. Private practice is not allowed. However, N P A. @ Rs.850/-p.m. on a pay from Rs 3000-3599 and @ Rs. 950/- p.m. on a pay from Rs. 3700-5999 is admissible to medical graduates only as per rules of the Council. Candidates called for interview for the posts of Deputy Director will be paid 1st class rail fare and for the posts of Senior Research Officer will be paid 2nd class rail fare by shortest route, on production of documents. Applications from employees working in Central/State Govt. Deptt./Public Sector Undertaking and Govt. funded research agencies must be forwarded through proper channel. Application forms can be obtained from the office of the Director General, Indian Council of Medical Research, Ansari Nagar, Post Box No.4508, New Delhi-110029. Forms duly completed should be sent to the Director General, Indian Council of Medical Research, Ansari Nagar, Post Box No.4508, New Delhi-110029 with a crossed IPO for Rs.2/- payable to the Director General, ICMR, New Delhi. SC/ST candidates are exempted from this payment. Incomplete and late application or without postal orders will not be entertained. The name of the post and of the Institute/Centre must be indicated in the Application Form. Separate application forms should be submitted for each post with crossed IPO for Rs.2/- and for each Institute/Centre.